RECLAMATION
Managing Water in the West

Construction of a Third Hydroelectric Generating Unit – Black Canyon Dam Draft Environmental Assessment

Emmett, Idaho

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Middle Snake Field Office, Boise, Idaho

June 2011

MISSION STATEMENTS

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Acronyms and Abbreviations

ADAAG	American Disability Act Accessibility Guidelines
Administrator	BPA Administrator
af	Acre feet
BLM	U.S. Bureau of Land Management
BMP	Best Management Practice
BP	Business Plan (EIS)
BPA	Bonneville Power Administration
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CMU	Concrete Masonry Unit
Council	Advisory Council on Historic Preservation
CWA	Clean Water Act
DOE	Department of Energy
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
ESA	Endangered Species Act
ESUs	Evolutionarily significant units
FONSI	Finding of No Significant Impact
FWS	U.S. Fish and Wildlife Service
GIS	Geographic Information System
HAER	Historic American Engineering Record
HDR	HDR Engineering Inc.
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Lands
IDWR	Idaho Department of Water Resources
ITAs	Indian Trust Assets

kW	Kilowatt
lb	Pound
LWGs	Local working groups
MBT	Migratory Bird Treaties
MW	Megawatt
MOA	Memorandum of Agreement
MWH	Montgomery Watson and Harza
MOU	Memorandum of Understanding
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NPPCA	Northwest Power Planning and Conservation Act
NRHP	National Register of Historic Places
Opinion	Biological Opinion(s)
Plant	Black Canyon Powerplant and associated equipment
RCP	Resource Contingency Programs (EIS)
Reclamation	U.S. Bureau of Reclamation
RM	River Mile
RMP	Resource Management Plan
SA	Supplemental Analysis (EIS)
SGPAs	Sage-grouse planning areas
SHPO	State Historic Preservation Office
TES	Threatened and Endangered Species
TCP	Traditional Cultural Property
TMDL	Total Maximum Daily Load
Unit	Hydroelectric generating unit
USFS	U.S. Forest Service
WMA	Wildlife Management Area

Chapter 1 – Purpose and Need for Action

This draft environmental assessment (EA) evaluates the construction of a third hydroelectric generating unit at the Black Canyon Diversion Dam proposed by the U.S. Department of the Interior Bureau of Reclamation (Reclamation). This activity would be in concert with, and include financial support from the Bonneville Power Administration (BPA) to provide an additional source of "green" power at this facility located near the town of Emmett, Idaho.

This EA is being prepared to assist Reclamation in finalizing a decision on the proposed action and to determine whether to issue a finding of no significant impact (FONSI) or a notice of intent to prepare an environmental impact statement. Environmental analysis is required by the National Environmental Policy Act (NEPA) for any Federal action that may have a significant impact on the environment.

1.1 Authority

The Boise Project was authorized under the Reclamation Act of 1902, (as amended and supplemented). The Northwest Power Planning and Conservation Act (NPPCA) (Northwest Power Act, 16 U.S.C. 839) authorizes Reclamation and BPA to undertake additions, replacements, and improvements at Federal projects in the region; and directs the BPA Administrator (Administrator) to acquire renewable resources to the maximum extent practicable.

1.2 Proposed Federal Action

The components of the proposed Federal action (proposed action) are to construct a third hydroelectric generating unit (unit), either a 10MW unit or a 12.5MW unit, at the Black Canyon Diversion Dam and a building to house the unit, place a new penstock through the dam, remove and replace the existing switchyard, remove and replace an existing administration building, and to install a new trash-rake removal system on the upstream side of the Dam. The third hydroelectric generating unit would utilize excess flows that now pass the existing powerplant (plant). As this is a run-of-the-river plant there will not be any change in operational water shaping or salmon augmentation flows downstream. In addition the project would preserve historic attributes of the existing facility and would construct the new facilities with similar historic appearance.

1.3 Purpose and Need for Action

The purpose of the proposed action is to provide an additional way of generating efficient and economical renewable hydroelectric power. Action is needed in order to:

- help BPA and Reclamation assure an adequate, economical, efficient, and reliable power supply;
- ensure additional safety benefits for the switchyard;

- optimize use of the water resource of the Payette River;
- maintain cost-effectiveness; while
- minimizing engineering and construction uncertainties

1.4 Project Location, Background and History

Figure 1-1. Location of Black Canyon Diversion Dam.

The Black Canyon Reservoir and Diversion Dam are located in Gem County, Idaho, approximately 6 miles from the town of Emmett and about 30 miles northwest of the city of Boise, Idaho (see Figure 1-1). Black Canyon Diversion Dam is a part of the Boise Project and impounds the Payette River. The reservoir is an important recreation resource in the region, both for local residents as well as those from the Boise metropolitan area. The Montour Wildlife Management Area (WMA) located at the east (upper) end of the reservoir is managed cooperatively with Idaho Department of Fish and Game (IDFG) primarily for wildlife habitat and recreation use. Reclamation's jurisdiction includes the reservoir (1,100 surface acres) and adjacent lands (1,700 acres), as well as the Montour WMA (1,350 acres). Reclamation lands generally consist of a strip of land around the reservoir with about 12 miles of shoreline. Lands in the vicinity are predominately for agricultural use, and surrounding land ownership includes both Federally managed land (Reclamation and the U.S. Bureau of Land Management (BLM) as well as private lands, primarily rangeland and rural residences).

Black Canyon Diversion Dam is part of the 121,000-acre Payette Division of the Boise Project and includes lands between the Payette and Boise Rivers and lands north of the Payette River in the Emmett Irrigation District which are irrigated from the Payette River and from drains operated within the Arrowrock Division. The Diversion Dam was completed in 1924 and the existing hydro-electric power plant was built in 1925 for the primary project purpose of agricultural irrigation, with hydroelectric power generation as a secondary function. Associated structures: Deadwood Dam and Reservoir on the Deadwood River and Cascade Dam and Lake Cascade on the North Fork of the Payette River were constructed in 1931 and 1948 respectively. The gravity distribution system was constructed during 1936-1940. Supplementing this system, a combination pump-gravity canal, designated the `C` Line, was completed in 1948.

Black Canyon Diversion Dam is a concrete gravity type dam with a structural height of 183 feet and a gated ogee overflow spillway. Water is diverted at the dam by gravity into the Black Canyon Main Canal on the south side of the Payette River and by two direct connected hydro-turbine driven pumps, located in an existing plant, to serve the Emmett Irrigation District Canal on the north side of the river. The facilities that operate Black Canyon Dam are located immediately below the dam on the north side of the Payette River and are located in a compound covering approximately seven acres. The compound contains various warehouses, shops, and

administration buildings to accommodate functions necessary for dam maintenance and operations.

The current powerhouse encloses two hydroelectric generators with a maximum generating capacity of 10.2MW, and two hydraulically (water) driven pumps that deliver water to serve the Emmett Irrigation District Canal. The unit's electrical components were upgraded from 4 MW to 5.1 MW each in 1995 to provide the capability of generating 10.2 MWs. Present generating capacity however, is limited to about 10 MWs without turbine upgrades. The plant supplies power to the Southern Idaho Federal Power System for Reclamation project uses and for non-project purposes. Surplus power is delivered to BPA for marketing and distribution to regional industries and municipalities.

Since the 1990's, augmentation flows for salmon have also been a factor in facility operations. The salmon augmentation flow guidelines dictate release policies that are different than past downstream discharges. The current, main operational guideline of concern is the need to release approximately 165,000 acre feet (af) during June and July in dry years and during July and August in wet years (or an average flow of approximately 1,340 cubic feet per second (cfs) over the two month summer period).

In the 1980's a Planning Report and Draft Environmental Statement for the Boise Project Power and Modification Study within the Payette River Basin was authorized to analyze the potential for developing hydropower plants at Cascade and Deadwood and for increasing power generation at Black Canyon Dam. The basis of the planning report was to emphasize national economic development consistent with environmental statutes and state and local concerns. In 1985 a Black Canyon Diversion Dam Hydroelectric Upgrade Feasibility Study was completed by Reclamation. An update of that document was completed in 2003 by MWH and again in 2008 by HDR. The evaluation of 5MW, 10MW and 15MW conceptual designs, turbine analysis and cost estimates were developed. In addition HDR performed a supplemental analysis for the past three water years. Based on this information the value of the generation was determined from power rate information provided to Reclamation. From these studies an additional 10 MW hydroelectric unit and associated equipment is recommended.

BPA prepared a Resource Contingency Programs Environmental Impact Statement (EIS) in (RCP EIS, Department of Energy (DOE/EIS-0230), November 1995) and Supplement Analysis (SA, DOE/EIS-0230/SA-02, May 9, 2001) to evaluate the trade-offs among resources to meet the load. The Administrator chose to implement the Emphasize Conservation Alternative, which supported the development of new renewable resources, as well as conservation and efficiency improvements. In addition, the Administrator has chosen to implement the market driven alternative from BPA's Supplemental Analysis for the Business Plan EIS (BP EIS, DOE/EIS-0183, April 2007). The Proposed Action supports using renewable resources to meet BPA's long term load obligations.

To meet increasing energy requirements and to comply with executive branch direction to develop renewable energy resources, BPA and Reclamation also seeks to develop additional new power generating projects with renewable resources to meet the load requirements of customers in the Southern Idaho area. Idaho is a net importer of power, meaning not enough power is generated within Idaho to meet Idaho demands. Likewise, BPA also transmits power from Washington State and the rest of the region to meet Federal loads in Idaho. Presently there are transmission constraints limiting the amount of power that can be imported into Idaho. The

proposed additional hydroelectric generating unit and associated facilities at Black Canyon Diversion Dam would satisfy part of this need.

1.5 Scoping of Issues and Concerns

Scoping is an early and open process used to obtain information that helps identify issues and concerns related to a proposed action, the affected public and geographical area, alternatives, and constraints in the NEPA process.

In August of 2010 Reclamation mailed a scoping document to over 62 agencies, Indian Tribes, members of Congress, organizations and individuals soliciting their help in identifying any issues and concerns related to the proposed action. Reclamation received 10 responses to the public scoping effort. The issues identified in the responses are summarized below:

Issues/Comments

In favor at this time. Will there be any changes to irrigation and recreation flows?
Installation of draft tubes would require 404 permit however, the penstock and downstream information is insufficient to determine if permit required.
Good idea to maximize power, but concerned if raise spillway-flood Montour
Go for it cost effective and environmentally makes sense
Strongly support. Maximize renewable energy production
Concerned about building a new dam.
Concerned about free standing buildings over 120 sq feet in size and if structures will be placed west of the dam.
Indirect and Direct Effects on fisheries, including entrainment and mortality, water quality including temperature, suspended solids, dissolved oxygen, water levels and flows upstream and downstream of dam, changes in river morphometry? Mitigation measures?
Request for no load following at peak demand and enhance winter flows rather than restrict.
Fully supports construction.

1.6 Authorizing Actions, Permits, and Licenses

Table 1-1 lists the agencies, permits and approvals that may be required for the proposed action.

Table 1-1
Permits and Consultation that may be Required for the Proposed Action

Agency/Department	Permit/Approval	Required for
Federal Agencies		
U.S. Army Corp of Engineers	Discharge and Fill Permit 404	Potential cofferdam
U.S. Environmental Protection Agency	General construction activity stormwater permit	Stormwater discharges associated with construction activity
U.S. Fish and Wildlife Service	Section 7 consultation (Endangered Species Act, 16 USC 15311544)	Ensures Endangered Species Act compliance
State Agencies		
Idaho State Historic Preservation Office	Section 106 Consultation (National Historic Preservation Act, 16 USC 470)	Historic, architectural, archeological or cultural characteristics of properties that meet National Register criteria (State Historic Preservation Officer responsible for administration). Note: also refer to National Landmarks Program (36 Code of Federal Register (CFR) and National Historic Landmarks Program [36 CFR 65])

Chapter 2 – Description of Alternatives

Chapter 2 describes the proposed Federal action (proposed action), the No Action Alternative, and alternatives that were eliminated from consideration for construction of a third hydroelectric generating unit at the Black Canyon Diversion Dam.

2.1 Alternative Development

The alternatives and project design features presented in this chapter were determined by the scope of analysis and the results of several feasibility studies with criteria such as cost effectiveness, repayment ability, efficient use of the water resource, including augmentation flows and preservation of the historical attributes of the current facility. The scope was defined by the purpose and need for the project, as defined in Chapter 1, and the issues developed during scoping. Using this guidance, the range of alternatives developed include: a proposed installation of a separate third unit and associated facilities adjacent to the existing plant, and a No Action alternative required by NEPA. NEPA also requires federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.

2.2 Alternatives Considered in Detail

Alternatives that were considered in detail in this EA include the No Action and the Proposed Action alternative, as required by NEPA, alternatives considered but eliminated are discussed in Section 2.3.

2.2.1 No Action Alternative

Under the No Acton Alternative, no new third hydroelectric generating unit or associated facilities would be constructed. The Black Canyon Diversion Dam and plant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and be out of safety compliance for Occupational Safety and Health Administration (OSHA) and Reclamation Health and Safety Standards. The existing switchyard is located in a high traffic area which creates a potential safety problem to personnel either working on or repairing equipment during a ground fault or catastrophic component failure. Some periodic, minor maintenance may need to be performed on the existing facility to prevent deterioration and preserve the plant's historic properties.

2.2.2 Proposed Action

Under the proposed action, Reclamation would construct a third hydroelectric generating unit, either a 10MW unit or a 12.5MW unit, at the Black Canyon Diversion Dam, construction would include; a new powerhouse to house the unit, place a new 12.5-ft diameter penstock through the dam, remove and replace an existing switchyard, remove and replace an existing administration building, and install a new trash-rake removal system on the upstream side of the Dam (See Figure 2-1 Layout of Proposed Facilities). Reclamation did extensive planning and studies in the

development of the third unit plant to make sure excess water capacity justified the project. In the past and presently (depending on the weather and irrigation demands) excessive water is sent over the drum gates and flows downstream. Instead, of spilling or sending water over the drum gates, the excess amounts of water will be diverted and used for power in the third unit. It will become the main work horse in providing power.

The third unit will produce approximately 10 Megawatts (MW), while the other two existing units each produce 5 MW units. If the river discharge flows are sufficient to produce 10 MW or more, the new unit will be utilized first since it will be the most efficient unit at higher flows, and the two other units will be used as needed up to 20 MW. During times when the river discharge capacity is less than 10 MW, the third unit will be utilized down to approximately 5 MW, with the other two units off. To produce the most efficient operating scenario, the hydro power plant will remain a run-of-the-river plant, and flows will not be shaped to benefit power plant efficiency.

Proposed adjacent unit and plant facilities would consist of:

Powerplant / Switchyard / Administration Building

The overall footprint of the new plant, with either a 10MW unit or a 12.5MW unit, is slightly larger than its existing counterpart to accommodate the new unit and additional office space. The 53 ft. x 100 ft. x 46 ft exterior construction of the superstructure of the new plant will be cast-in-place concrete and precast concrete wall panels or Concrete Masonry Unit (CMU) infill with cement-base coating, a metal sloped roof structure, a 49 ft. deep reinforced concrete substructure and an 18 ft. x 20 ft. main service entrance door and 10 ft. x 14 ft. service entrance adjacent to existing plant. The current design includes an interior overhead gantry crane system similar to the one existing in the original powerhouse. All are designed to meet industry safety standards, American Disability Act Accessibility Guidelines (ADAAG) and be architecturally similar to the existing plant, to satisfy State Historic Preservation Office (Idaho SHPO) recommendations. Figure 2-2 gives a plan view of the proposed third powerplant.

The existing switchyard will be removed and replaced to a location just north of the existing powerhouse; and the unit bay will contain space for controls for new Unit 3 and existing Units 1 & 2 and all required mechanical equipment for the new unit; this includes the 6.9 kV station service electrical switchgear, service breakers, and power transformers, small office, and restroom, and emergency shower, two, oil-filled, 3-phase transformers, an oil containment and separation system, and station service panel to maintain existing plant station service.

To keep power supplied to the existing facility for continued operations, a transformer and switchgear will be provided by Idaho Power. The transformer will be located near the north end of the abutment of Black Canyon Dam. Reclamation will pay Idaho Power for installation and use of the transformer. To continue generation of power, Reclamation proposes to institute a phased approach whereby a new switchyard would be constructed; and then during a non-generating time frame, temporarily relocate the existing transformers and switchgear into the new switchyard. This should minimize and disruption of power generation and thereby affect to generation rates and income.

A significant amount of rerouting of power cables, relocation of distribution panels, and equipment rearrangement will be required to maintain station service power and C-line transmission line service during construction.

A fire protection system, 50 ton overhead gantry crane or monorail hoist(s) and 3,000 pound (lb) capacity elevator will be furnished and installed to address maintenance and safety concerns. The adjacent service yard will be resurfaced with asphalt and include the access road and parking areas used for contractor staging.

Other installations and upgrades include; an 8 path untrasonic flowmeter system; vertical Francis turbines; 3 draft tube bulkhead gates; either a 10 MW or 12.5 MW, 97.5% efficient synchronous generator; an air conditioning system required for indoor facilities with a control room; and a 56 ft. span, precast concrete girder bridge over tailrace channel.

The existing administration building structure was added to the facility in the mid to late 1960's to provide offices, multi-purpose facilities and a maintenance work area in support of the dam. This building will be demolished and relocated outside of the fenced facility ground to the southwest of the perimeter and south of Wild Rose Park, but still on Reclamation property. The structure again would provide space for multi-purpose uses, administrative staff, and would be a single level structure 80ft x 50ft in dimension.

The existing administration building also houses a maintenance shop, which will be located northwest of the new powerhouse along the west perimeter of the current facility grounds. A new welding shop area will be housed with the maintenance shop, and be a two level structure approximately 36ft x 80ft in dimension for the first level and 70ft x 60ft for the second level. It will contain an electrical shop, maintenance mechanic staging and work area, a welding shop, and a communication and instrumentation test/work area.

Trash-rake / Penstock / Generating Unit / Tailrace

A new trash-rake system is required to accommodate a trash removal system which will be designed and furnished most likely a gripper style automatic trash rake system with debris chute.

The penstock would be founded on the front face of the dam and on rock near to the existing penstocks. Although partly buried in the ground near the generating unit, its alignment would be parallel to the existing penstocks. Following dam penetration for a new 12.5 ft. diameter steel penstock, a 9 ft. x 11 ft. slide gate for the new penstock will be installed on the up-stream side of the dam. A coffer dam or like system will be necessary for penstock penetration, installation of the slide gate and maybe necessary to protect the construction area downstream where the tailrace is. There is a possible need for an earth retention dam or concrete retaining wall along a portion of the new penstock alignment to provide protection of dam foundation drains. Removal of existing rock mass will be required in proximity to the base of the dam, in the area where the penstock is buried near the generating unit, and for the generating unit itself, which will be accomplished through use of explosive agents due to the extreme hardness of the rock.

Reclamation and BPA would work together under a partnership agreement to allow for an additional unit and plant by utilizing the water discharged over the spillway as a potential improvement, which would provide additional renewable hydropower, and retain fish augmentation and agricultural irrigation flows.

Figure 2-1. Layout of Proposed Facilities

2.3 Alternatives Eliminated from Consideration

Reclamation has evaluated several alternatives for power production at the Diversion Dam since the initial 1985 feasibility study. Various physical arrangements (depending on the generation capacity chosen) are possible, but the existing configuration limits the viable options. The past two studies considered using the existing open intake area and installing a new penstock along the face of the dam and to the right of the existing penstocks. The alternatives studied included building a new powerhouse either downstream or to the west of the existing facility (too much costs and inconvenient to the rest of the facilities); an outdoor plant design (rejected due to increased maintenance issues); replacing turbine runners and upgrading generators (both rejected as limited room for expansion and limited size of existing facility based on average flow conditions); and consideration of several hydroelectric generation capacities - 5MW (worst economic benefit), and 15MW (best economic benefit but eliminated due to size at restricted site conditions).

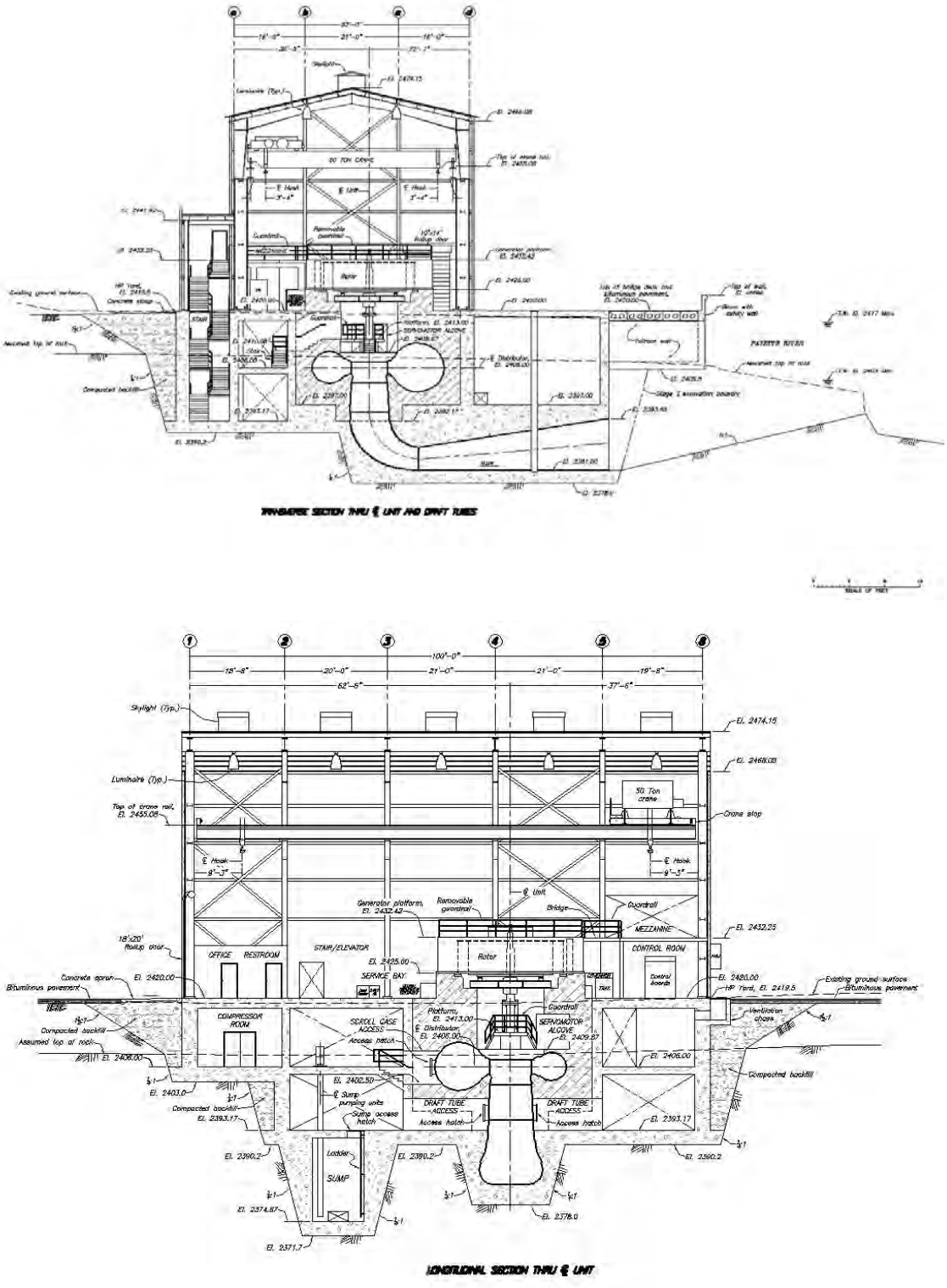

Figure 2-2. Plan View of the Proposed Third Powerplant

Chapter 3 – Affected Environment and Environmental Consequences

This chapter describes existing conditions, environmental consequences and proposed mitigation for key resources in the project area. This is not a comprehensive discussion of every resource, rather this chapter focuses on aspects of the environment that were identified as issues during scoping or may be affected by the proposed action being considered. This chapter compares the effects of the proposed action and the No Action Alternative on the resources that were identified through scoping as key components of the affected environment, or those that must be analyzed due to laws, regulations or policies.

3.1. Land Use, Recreation, and Power Generation

3.1.1 Affected Environment

Reclamation owns Black Canyon Dam and Reservoir and a significant portion of the land immediately adjacent to the reservoir for a total of approximately 3,900 acres. There are approximately 2,800 acres of Reclamation land adjacent to the reservoir which has 1,100 surface acres and contains approximately 44,800 af of water. Most of the land north and south of Black Canyon Reservoir has been classified as "rangeland" using 1993 LANDSAT (satellite imagery) data for land cover. Lands surrounding Emmett Valley to the west, Montour Valley to the east, and Sweet Valley to the northeast of the project area, are classified as "irrigated agriculture." There are small portions of lands adjacent to rivers and other water bodies, such as the reservoir, that have been classified as "forested" or "non forested wetlands." The town of Emmett is the only area in the vicinity of the study area classified as "dense urban." This geographic information system (GIS) data, was obtained from Idaho Department of Water Resources (IDWR) (Reclamation 2004). Primary land uses surrounding the Reservoir and project area include agriculture/irrigation, recreation, and power generation.

Agriculture/Irrigation

Land use is primarily agricultural with dryland and irrigated croplands, along with upland grazing. Agricultural activity in the Boise and Payette Valleys started in the early 1880s when settlers began filing on arid lands under private irrigation enterprises. By 1900, about 148,000 acres in the area had been placed under irrigation. The Boise Project currently furnishes irrigation water in southwestern Idaho and eastern Oregon to 225,000 acres of project lands and 165,000 acres of land under special and Warren Act contracts. Approximately 114,000 acres are under some form of irrigation in the Payette Division, supplied through in-river diversions, pumps, or from withdrawals from the Black Canyon Canal via the Payette River and Black Canyon Reservoir, as well as surplus drainage from the Arrowrock Division. Storage reservoirs in the Payette Division include Deadwood Reservoir on Deadwood River and Cascade Reservoir on the North Fork of the Payette. The Boise Project grows sweet corn seed, which provides a major portion of the Nation`s requirements. The project produces large quantities of grain, onions, sugar beets, corn, potatoes, apples, pasture and alfalfa hay and seed. The hay and forage crops in turn support the large number of local dairy and beef cattle. Uplands are used for open

grazing of cattle and sheep. Landownership is mostly private, with some public lands found in the uplands and river bottom.

Recreation

Developed recreation facilities are provided by Reclamation in five locations around Black Canyon Reservoir: Black Canyon Park, Cobblestone Park, Montour WMA, Triangle Park, and Wild Rose Park. Wild Rose Park is located below the dam adjacent to the Black Canyon powerhouse and the proposed project area. Wild Rose Park is an 11.3 acre site located on the site of the original construction camp used when Black Canyon Dam was being built. Wild Rose Park currently provides individual picnic tables, a gazebo, and a group picnic shelter.

Power Generation

In addition to providing water diversion for irrigation, the dam has a hydroelectric power-plant with two generators which had an initial total capacity of 8 MWs; but since upgraded in 1995, are capable of generating a combined 10.2 MWs. The plant supplies power to the Southern Idaho Federal Power System for Reclamation project uses and for non-project purposes. The plant is operated as a "run-of-the-river" plant, although operational releases are coordinated to maximize power generation. The wheeling of power is handled between Idaho Power and BPA through the Open Access Transmission Tariff (OATT). Total generation from the Southern Idaho Generation sources should not be impacted by this project, due to the minimal down time during the non-power generating period to make the transfer from the existing switchyard to the new switchyard. In all cases BPA supplies the power and any shortages are absorbed by BPA through their interconnections with Idaho Power. Because of this, the dam and reservoir do not have flood control capability. In 1997, the southern Idaho automation program was implemented that allows remote control of the southern Idaho plants. This has resulted in decreased operational expenses and increased operational efficiency for all plants (see more detail in Section 3.2).

3.1.2 Environmental Consequences

3.1.2.1 No Action Alternative

For the No Action Alternative, there would be no construction of a new separate third hydroelectric unit, the switchyard would remain where it is with its safety issues, the trash-rake would not be installed to remove woody debris from the up-stream face of the dam, and the administration/shop building would remain in its present location. The land use activities surrounding Black Canyon Diversion Dam Powerplant would continue to be managed as it currently is. Power generation would continue at its current operating status.

3.1.2.2 Proposed Acton Alternative

The overall addition of a third unit is an expansion within an existing plant facility which has undergone extensive disturbance in the past. Therefore any affect to resources would be an extension of the existing conditions. Construction of the Proposed Action would temporarily close off the lower part of Wild Rose Park as it may become a staging area for the construction contractor and for contract material (see Figure 3-1). This action should have little or temporary impacts on recreation within the park. Under normal reservoir operations, Black Canyon Reservoir would be drawn down for the penetration of the penstock and installation of the slide gate on the up-stream face. A coffer-dam like structure (see Figure 3-2) would be installed on the up-stream dam face to address any above normal flows. It is anticipated that this drawdown

would affect recreation but only during the November through March time period under normal reservoir operations, and therefore only short term in duration.

Figure 3-1. Layout of Proposed Material Storage Sites and Contractor Staging Area

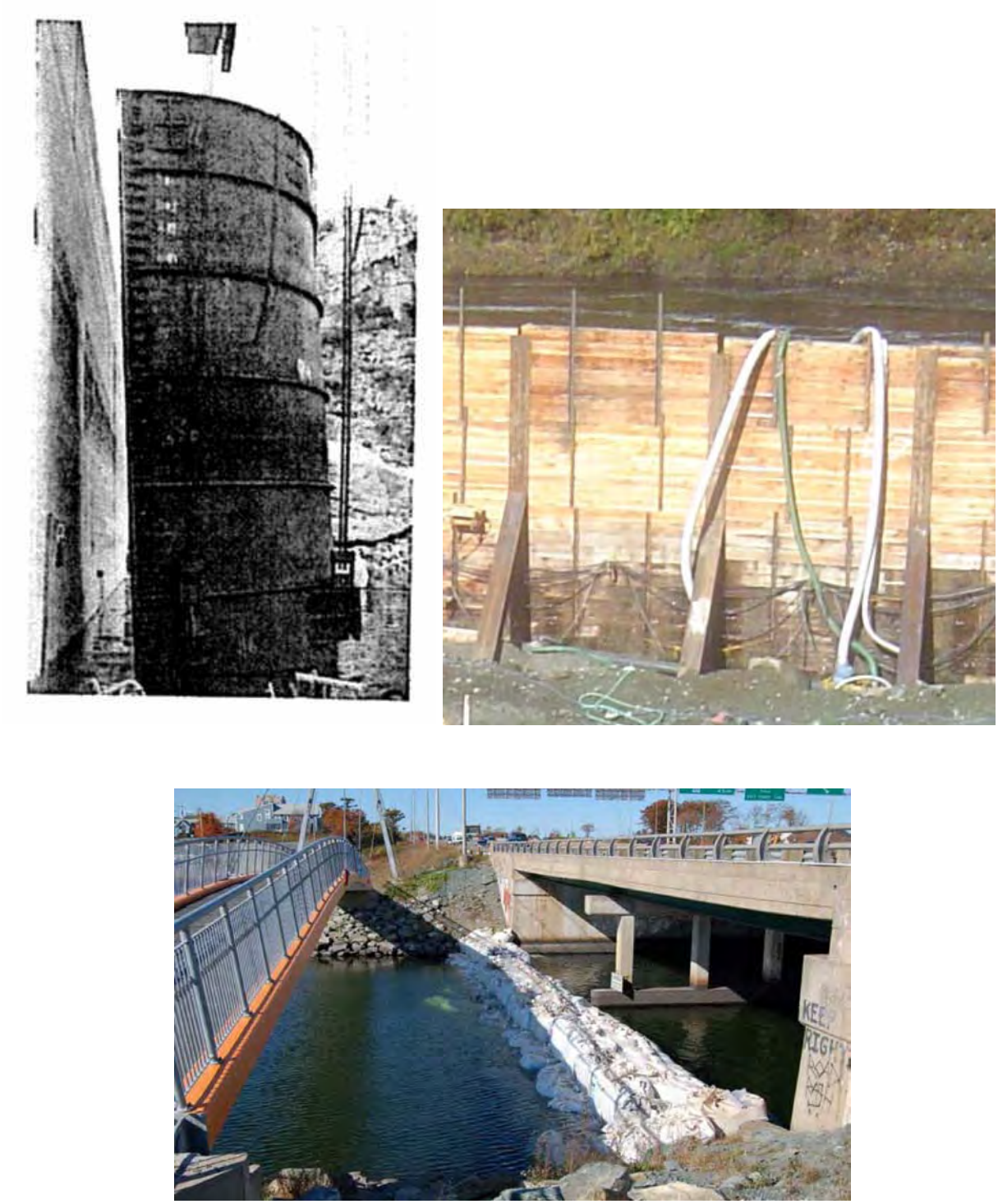

Figure 3-2. Conceptual Coffer Dam Structures

(The lower photo shows a sandbag cofferdam which maybe used downstream)

During the actual construction of this project there would be increased traffic and blasting noise along the north bank of the river, which may affect visitors at the Wild Rose and Cobblestone Parks. No new road construction or alterations are proposed. Agricultural practices and other land uses will not be affected by this proposed action. Power generation would be improved to provide more power than what currently exists.

3.1.3 Mitigation Summary

Under the Proposed Action Alternative, due to the probability that a cofferdam or like system will be constructed on the upstream face of the dam and in the tail race area to reduce the safety risk during construction; the contractor will be required to comply with all permit requirements and exercise best management practices to reduce sediment discharge into the water course.

Basic land use, recreation, or power generation will not be adversely affected and therefore no mitigation measures are proposed.

3.2 Reservoir Operation and Hydrology

3.2.1 Affected Environment

Black Canyon Diversion Dam is a concrete gravity type dam with an ogee overflow spillway. The dam has a structural height of 183 feet and serves to divert water to the Payette Division through Black Canyon Canal. The original reservoir capacity was 44,700 af but heavy siltation over time has reduced the capacity. At full pool there is now a volume of 29,600 af. Water is diverted at Black Canyon Diversion Dam by gravity and delivered into the Black Canyon Main Canal on the south side of the Payette River and by two direct connected turbine-driven pumps, located in the powerhouse, to serve the Emmett Irrigation District Canal on the north side of the river. The plants electrical components were upgraded from 4 MW to 5.1 MW each in 1995 to provide the capability of generating 10.2 MWs. Present generating capacity however, is limited to about 10 MWs without turbine upgrades. The plant supplies power to the Southern Idaho Federal Power System for Bureau of Reclamation project uses and for non-project purposes.

In 1988, a six-inch raise in Black Canyon Reservoir water surface was implemented by modifying the spillway drumgate and the radial gate at the Black Canyon Main Canal headworks. This was done to improve regulation of irrigation diversions from Black Canyon Reservoir to the Black Canyon Main Canal and to conserve the amount of stored water released from upstream reservoirs to meet fluctuating irrigation demands.

Pumping Plants

The pumping plants are: (1) Black Canyon at the Black Canyon Diversion Dam; (2) `C` Line Canal at station 1064 on the Black Canyon Main Canal; and (3) Willow Creek at station 1111 on `C` Line Canal East, about 4 miles northeast of Middleton, Idaho. There are also four small relift pumping plants.

The Black Canyon Pumping Plant contains two pumps directly connected to turbines; the `C` Line Canal plant has five pumps; and Willow Creek has two motor-driven pumps lifting water from the `C` Line Canal East.

Payette Division Canal System

The Black Canyon Main Canal is 29 miles long and extends from the Black Canyon Diversion Dam south and west along the Payette River. The canal has a diversion capacity of 1,300 cfs.

The `C` Line Canal East, with diversion capacity of 469 cfs, begins at `C` Line Canal Pumping Plant on the Black Canyon Main Canal and is 21 miles long. The `C` Line Canal West branches from the `C` Line Canal East, extends 24 miles, and has a diversion capacity of 60 cfs.

The `A` Line and `D` Line Canals begin at the terminus of the Black Canyon Main Canal. The `A` Line Canal is 33 miles long and has a diversion capacity of 226 cfs; the `D` Line Canal, 39 miles long, has a diversion capacity of 254 cfs.

Flow

Water from the Payette River basin below the dam is used for irrigation, power, salmon flow augmentation, recreation, as well as water quality and other fish and wildlife purposes. From Black Canyon Dam the average monthly discharge (in cfs) in dry and wet years ranges from 700 cfs to 7,000 cfs respectively, with the average ranging around 2,285 cfs. Since 1993, in response to the terms and conditions cited in associated Biological Opinions for listed anadromous fish, Reclamation has provided 427,000 af of water for flow augmentation in the lower Snake and Columbia Rivers. Water has been provided from Reclamation un-contracted reservoir space, reservoir space and natural flow rights Reclamation has acquired from willing sellers, and rental of water from Idaho rental pools (District 1 - Upper Snake River, District 63 - Boise River, and District 65 - Payette River).

Black Canyon operating levels within the reservoir remain at full pool until around October 15th, when flows are released at 0.05 ft/day until normal pool level is reached. Flow releases from Black Canyon Diversion Dam occur through individual intakes and penstocks to two hydroelectric generation units. The intakes are located on the face of the dam and the individual unit penstocks penetrate the dam horizontally at the intake level. The penstocks are built on the face of the dam with the invert of the upper end of the penstock elevation at approximately 2,468 ft, and the lower end at the invert elevation of approximately 2,410 ft. The existing penstocks are 8 feet in diameter. The two 5 MW generating units consist of vertical Francis-type turbines with a spiral cases. The spillway consist of three bays, each with float controlled, 16 foot high drum gates. The maximum spillway design discharge capacity is 40,000 cfs, but probable maximum spillway discharge is significantly higher than the spillway design discharge. The tail-water levels vary with total release from the spillway, release through low-level outlets, and discharges through the hydro-pumps and hydroelectric generating units. The normal pool level of Black Canyon Reservoir at the forebays is 2,483 ft. The reservoir level would be lowered below 2,468 ft to enable the construction of the penstock penetration. This is considered to be within the normal operations of the reservoir for regular maintenance activities, which occur every few years.

In “the Payette Division, Boise Project, feasibility report dated October 14, 1928, it stated that one of the major reasons for building the Payette Division was to supply a steady flow of water for the Black Canyon power plant.” (Letter. Associate Solicitor, Energy and Resources, to Acting chief, Division of Power, Bureau of Reclamation, 9/25/1987).

There are various contracts in place pertaining to irrigation requirements such as Cascade and Deadwood storage, salmon flows, and power that stipulate the specific flows required by Reclamation to meet the demands of the Irrigation Districts and water users. Incorporated into some of those contracts are;

- That water is specifically set aside in Deadwood, which is authorized for both irrigation and power.
- The third unit when it is in place will not run 24/7.
- Power is also taken out of "uncontracted" water for the plant and other uses (salmon flow, downstream augmentation, etc.).
- Small amounts of "power water" will be run down the river. Water that passes through the turbines goes down the river for use, although not into Emmett or Black Canyon Irrigation Districts canal system. Water is also required in the river to meet the needs of downstream users.

Indeed, flow augmentation from the Payette Division will be consistent with the Nez-Perce Term Sheet (Snake River Water Rights Act of 2004, P.L. 108-447, 118 stat. 3431 to 3441) (December 8, 2004). During the irrigation season, the Water Master delivers water according to the priorities of the various water right holders.

3.2.2 Environmental Consequences

3.2.2.1 No-Action Alternative

Under the No Action alternative, there would be no construction of a new separate third hydroelectric unit, the switchyard would remain where it is with its safety issues, the trash-rake would not be installed to remove woody debris from the up-stream face of the dam, and the administration/shop building would remain in its present location. The Black Canyon Diversion Dam and plant would continue to be operated and managed as it currently is. River flows and reservoir levels above and below the Diversion Dam would remain similar to operations over the past several years, depending on runoff in the basin, and would continue to serve the purpose of irrigation, recreation, power, salmon flow augmentation, as well as water quality and other fish and wildlife purposes.

3.2.2.2 Proposed Action Alternative

Under the Proposed Action, the construction of a new separate third plant and its subsequent operational needs, should not affect how water flows are used since it is "run-of-the-river". This action will not affect any associated existing water rights, flow augmentation, or the standard operations of the Irrigation Districts and water users. Storage levels of the upstream reservoirs would remain as they are depending on natural conditions. The weather may also play a role in influencing the flow and operation of the third unit. The operation will be the same as now, whereas, Reclamation will still accommodate its historic contracts and operational responsibilities of managing water and providing this important resource to water users. The switchyard will be relocated and upgraded to address safety issues. The existing switchyard is located in a high traffic area which creates a potential safety problem to personnel either working on or repairing equipment during a ground fault or catastrophic component failure. Because of the limited space surrounding the switchyard, the surrounding fence cannot be moved back away

from the transformers and switchgear to reduce the effect of such a scenario. Replacement of the trashrack would occur during the winter low flow period, and these flows would continue to be passed through the sluice gates located below the trashracks.

3.2.3 Mitigation Summary

No mitigation measures are proposed because neither alternative is anticipated to have significant impacts on reservoir operation, hydrology in the project area, or water rights.

3.3 Water Quality

3.3.1 Affected Environment

The lower Payette River basin area from River Mile (RM) 38.5 (where the Black Canyon Diversion Dam is) to River Mile 0 (confluence of the Payette River and the Snake River) is approximately 2,000,000 acres. Approximately 380,000 acres of irrigated and non-irrigated lands are located in this area and have been recorded in a Subbasin Assessment and Total Maximum Daily Load (TMDL) report for the lower Payette River area (Ingam 1999; Addendum 2003).

Section 303(d) of the Federal Clean Water Act (CWA) requires states to develop TMDLs for those water bodies determined not in full support of the designated beneficial uses and those water bodies are considered to be water quality limited. A TMDL documents the amount of pollutant(s) a water body can assimilate without violating state water quality standards. As defined in 40 Code of Federal Regulations (CFR) Part 130, these plans are designed to provide load allocations to both point sources (waste-load allocations), non-point sources (load allocation) and provide for a margin of safety.

Temperature, nutrients and bacteria are listed as pollutants of concern in the lower Payette River and were at levels that are impairing or could impair beneficial uses. Beneficial uses impacted or impaired included: cold water biota; salmonid spawning; and primary contact and secondary contact recreation uses (Ingam 1999; Addendum 2003).

Sources of pollutants include both point sources and non-point sources. Point sources are limited mainly to municipal treatment plants and confined animal feeding operations. Non-point sources are associated with agricultural, urban, suburban and rural areas.

Total phosphorus and nitrogen are at concentrations that may cause nuisance aquatic vegetation growth. However, it was concluded that nutrients are not currently impairing beneficial uses under current flow conditions. While dissolved oxygen concentrations do not drop below water quality standards, monitoring indicated that aquatic growth is causing fluctuation in dissolved oxygen levels.

Summer water temperatures in the lower Payette River are warm and exceed water quality standards for both cold water biota and salmonid spawning. However, other factors including habitat modification and flow alteration may contribute to impairment of beneficial uses. Blockage and diversion structures are interfering with migration patterns of trout species to historic spawning areas. Although it is demonstrated that water temperatures exceed current water quality standards for cold water biota and salmonid spawning, it is believed that warm water temperature is not the only pollutant impairing beneficial uses. Other conditions that

preclude the development of a TMDL for temperature include warm water temperatures that exceed water quality standards originating from Black Canyon Reservoir (40 CFR 131.10(g)(3)(4)(5)). For the lower Payette the average daily standard is 9°C and the maximum daily temperature standard is 13°C both of which were exceeded on 90% and 49% of the dates sampled, respectively, at a location off of Highway 95. At Black Canyon Dam, the average daily standard was exceeded on 68% of the dates and the maximum instantaneous standard was exceeded on 32% of the dates (Freeman, IN Press, 1999). The highest instantaneous temperature at Black Canyon Dam was 23°C (Freeman, IN Press, 1999). Overall average temperatures exceeded the 19°C standard at all stations.

Fecal coliform (Fecal coli) bacteria levels exceed the water quality standards for both primary and secondary contact recreation, these levels are noted from below Black Canyon Dam to the Snake River, from RM 25 to the confluence. Overall fecal coli reduction of 84% will be required to achieve water quality standards. Load allocation will focus on non-point sources only (load allocation).

Flow alteration and habitat modification are not pollutants as described under §303(d) of the CWA (EPA, 1999). Furthermore, there are no water quality standards for habitat upon which to base a load allocation.

During construction of the third power plant, there may be a cofferdam or like system installed and some blasting operations approximately 60 feet way from the tailrace. These items are described in Sections 3.1 and 3.4.

3.3.2 Environmental Consequences

3.3.2.1 No Action Alternative

For the No Action Alternative, there would be no construction of a new separate third hydroelectric unit, the switchyard would remain where it is with its safety issues, the trash-rake would not be installed to remove woody debris from the up-stream face of the dam, and the administration/shop building would remain in its present location. Water Quality and the various TMDL components would remain at their current levels.

3.3.2.2 Proposed Acton Alternative

Under the Proposed Action, the construction of a new separate third plant and its associated facilities would proceed. Although it is demonstrated that water temperatures exceed current State of Idaho criteria for cold water biota and salmonid spawning; water temperature is not the limiting condition impairing beneficial uses. Construction would not cause a noticeable increase in turbidity or suspended sediment based on similar work to the Black Canyon Diversion Dam sluice gates in the past. Any point discharges from the switchyard would be contained in an approved system; as well as for the new plant and administration building. These systems will be incorporated into the designs of the facilities. Under the proposed action a general stormwater permit would be acquired to address any run-off from construction activities.

Both installation of any cofferdam or blasting would take place during the non-irrigation season when downstream flows are at its lowest elevation. As Reclamation requirement, the contractor is expected to utilize BMPs such as the use of silt curtains to control any potential sediment releases in order to protect water quality. The timing of such operations during such low water elevation periods, should result in a minimal impact to water quality. Because new material may

be placed in the spillway area, a Section 404 permit from the Corps would be required for Proposed Action Alternative. In addition, the State would then provide a CWA Section 401 water quality certification for the construction activities. These permits and certifications would outline requirements to minimize the impacts to water quality associated with the construction activities.

3.3.3 Mitigation Summary

Prior to blasting and material removal, BMPs such as the use of silt curtains would be employed to control any potential sediment releases in order to protect water quality. The contractor would be required to comply with any 401 or 404 permit conditions. In regards to water temperature, nutrients and bacteria, total phosphorus, nitrogen, or fecal coliform bacteria, no mitigation measures are proposed because neither alternative is anticipated to have significant impacts due to construction of the third plant.

3.4 Noise

This section defines noise, describes the existing noise setting in the proposed action area and mainly focuses upon blasting since this site is extremely rural in location and no public housing is nearby. Construction hours will likely range from 8 to 12 hours per day; and 24/7 work days are not anticipated. Therefore, only daytime impacts are discussed.

3.4.1 Affected Environment

Noise is defined as unwanted sound that is objectionable because it is disturbing or annoying due to its pitch or loudness. Pitch is the height or depth of a tone or sound. Higher pitched signals sound louder to humans than sounds with a lower pitch. Loudness is intensity of sound waves combined with the reception characteristics of the ear.

A decibel (dB) is a unit of measurement that is used to indicate the relative amplitude of a sound. Sound levels in decibels are calculated on a logarithmic scale. Subjectively, each 10-decibel increase in sound level is generally perceived as approximately a doubling of loudness.

There are several methods of characterizing sound. The most common is the A-weighted sound level or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 3-1. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy equivalent sound/noise descriptor is called Leq. The most common averaging period is hourly, but Leq can describe any series of noise events of arbitrary duration.

Since the sensitivity to noise increases during the evening and at night – because excessive noise interferes with the ability to sleep – 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The Community Noise Equivalent Level (CNEL) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 p.m. to 10:00 p.m.) and a 10 dB addition to nocturnal (10:00 p.m. to 7:00 a.m.) noise levels. The Day/Night Average Sound Level, Ldn, is essentially the same as

CNEL, with the exception that the evening period is dropped and all occurrences during this 3-hour period are grouped into the daytime period.

Blasting would be required to remove rock in the area of the new generating unit as part of the construction process. The blasting operation would be conducted mostly on the dry rock surface; however, the removal of the blasted material may occur in wet conditions depending on the geology of the exposed foundation. The blasting and material removal would be required to take place during the non-irrigation season when downstream flows are at its lowest elevation. BMPs, such as the use of silt curtains, would be employed to control sediment releases during blasting and the removal of blasted material in order to protect water quality and resident fish habitat. The two primary environmental effects of blasting are airborne noise and groundborne vibration. A brief discussion of each of these effects and standards commonly used to assess the impacts of blasting follows.

Table 3-1. Representative outdoor and indoor noise levels (in units of dBA) (Illingworth and Rodkin 2006; USDOT FHA 2006).

At a Given Distance from Noise Source	*A-Weighted Sound Level in Decibels*	*Noise Environments*	*Subjective Impression Effect*
	— 140 —		
Civil Defense Siren (100')	— 130 —		
Jet Takeoff (200')	— 120 —		Pain Threshold
	— 110 —	Rock Music Concert	
Diesel Pile Driver (100')	— 100 —		Very Loud Hearing Damage After 15 Minutes Exposure
	— 95 —		Repeated Exposure Risks Permanent Hearing Loss
Heavy truck (50')	— 90 —	Boiler Room	Very Annoying Hearing damage (8 hrs)
Freight Cars (50')		Printing Press Plant	
Pneumatic Drill (50')	— 80 —		Annoying, Intrusive Interferes With Conversation
Freeway (100')		In Kitchen With Garbage Disposal Running	
Vacuum Cleaner (10')	— 70 —		Moderately Loud Intrusive, Interferes with Telephone Conversation Noise Begins To Harm Hearing
		Data Processing Center	
Air conditioning unit (20')	— 60 —		Intrusive
		Department Store	
Light Traffic (100')	— 50 —		
Large Transformer (200')		Private Business Office	
	— 40 —		Quiet
		Quiet Bedroom	
Soft Whisper (5')	— 30 —		Very Quiet
		Recording Studio	
	— 20 —		
	— 10 —		Threshold of Hearing
	— 0 —		

Airblast

Energy released in an explosion creates an air overpressure (commonly called an airblast) in the form of a propagating wave. If the receiver is close enough to the blast, the overpressure can be felt as the pressure front of the airblast passes. The accompanying booming sound lasts for only a few seconds.

Because an airblast lasts for only a few seconds, use of Leq (a measure of sound level averaged over a specified period of time) to describe blast noise is inappropriate. Airblast is properly measured and described as a linear peak air overpressure (i.e., an increase above atmospheric pressure) in pounds per square inch (psi). Modern blast monitoring equipment is also capable of measuring peak overpressure data in terms of unweighted dB. Decibels, as used to describe airblast, should not be confused with or compared to dBA, which are commonly used to describe relatively steady-state noise levels. An airblast with a peak overpressure of 130 dB can be described as being mildly unpleasant, whereas exposure to jet aircraft noise at a level of 130 dBA would be painful and deafening.

Ground Vibration

Blasting creates seismic waves that radiate along the surface of the earth and downward into the earth. These surface waves can be felt as ground vibration. Airblast and ground vibration can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance will result in different vibration levels containing different frequencies and displacements. In all cases, vibration amplitudes and high frequency content will decrease with increasing distance from the blasting source.

As seismic waves travel outward from a blast, they excite the particles of rock and soil through which they pass and cause them to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second) at which these particles move is the commonly accepted descriptor of the vibration amplitude, referred to as the peak particle velocity (ppv).

Existing Noise Levels

Sensitive receptors for noise can be defined as people at various locations who are participating in activities for which low noise levels are important (e.g., activities conducted at residences, hospitals, schools, libraries, recreational areas, and places of worship). Sensitive noise receptors near the proposed new powerplant include Wild Rose park. Noise sources in the area of potential affect are predominantly natural, including mainly the noise generated from the flow of water in the tailrace. Accordingly, existing ambient noise levels are low. Background noise levels in wilderness and rural areas typically range between 35 and 45 dBa. The park is located approximately 400 feet north and west of the construction zone. The closest private residence is downstream of the construction zone about 1,500 feet on the south side of the river.

3.4.2 Environmental Consequences

3.4.2.1 No Action Alternative

For the No Action Alternative, there would be no construction of a new separate third hydroelectric unit, the switchyard would remain where it is with its safety issues, and the

administration/shop building would remain in its present location. Existing powerplant and O&M noise with its various components would remain at their current levels.

3.4.2.2 Proposed Acton Alternative

The excavation would require the contractor to drill and blast the hard basalt foundation at the location of the proposed new generating plant. The drilling would occur on a current asphalt parking area and be excavated to a elevation approximately 45 feet deep. The area to be blasted consists of a extremely hard basalt material and some depositional areas within the basalt in cracks and seams. This activity would occur below the annual tailrace drawdown elevation. Even though the blasting area is approximately 90 feet from the existing powerplant structure (which is listed as a National Historic Structure), ground vibrations may affect the structure. Without knowing the frequencies which maybe imparted due to the type of blasting material and its placement configuration, monitoring equipment will be necessary to determine the appropriate load configuration. Due to its isolation and distance from the tailrace there should be no or at the most a very limited amount of sediment introduced into the tailrace water area from the blasting activities. If any sediment is introduced it would of extremely short duration. Sediment control management practices would be in place prior to the blasting activities. These BMPs are expected to minimize the intrusion of sediment into the tailrace.

3.4.3 Mitigation Summary

Blasting would take place during the non-irrigation season when downstream flows are at its lowest elevation. It would also take place during the daylight hours. Prior to blasting and material removal, monitoring equipment will be placed on the existing powerplant building to assure the structure is not adversely affected, and BMPs such as the use of silt curtains, would be employed to control any potential sediment releases in order to protect water quality and resident fish habitat.

3.5 Vegetation

3.5.1 Affected Environment

The proposed work area is primarily developed with green lawns and other primarily non-native shrubs and trees and which may be removed during construction of the plant. The south side of the river consists of a willow and cottonwood community, which is typical of lowland riparian areas located within the southeast region of Idaho. Vegetation and plant communities along the Payette River above and below the dam have been modified from the original native composition by farming, construction of irrigation projects, recreation, livestock grazing, and other human uses, as well as the shallow groundwater resulting from the reservoir.

Some areas within the adjacent Wild Rose Park have native species, such as elderberry, golden currant, black cottonwood, Douglas hawthorn, dogwood, and willows are thriving, but much of this area is dominated by exotics. Some of these non-native species such as apple trees, black locust, Russian olive, orchard grass, and smooth brome were probably originally planted and have spread. Others, such as Canada thistle, spotted knapweed, hound’s tongue, poison hemlock, rush skeletonweed, teasel, blue mustard, chicory, purple loosestrife, and sowthistle are invaders

that are able to spread rapidly. Other invaders that have already become established are reed canarygrass, false indigo, bristly foxtail, downy brome, and dogfennel (Reclamation 2004).

Several species of plants are found mainly along the irrigation and drainage systems, including watercress, speedwell, and duck weed. Upland native vegetation is dominated by big sagebrush, bitterbrush, and rabbitbrush. Upland understory species include bluebunch wheatgrass, squirreltail, and balsamroot. In many areas, especially along roadways, upland areas have been invaded by downy brome and rush skeletonweed (Reclamation 2004).

Vegetation management issues along the Payette River include the spread of invasive and noxious weeds, the maintenance and enhancement of plant species diversity, quality wildlife habitats, and the protection of sensitive plant species of concern. The most crucial vegetation management issue is weed suppression. Noxious and other invasive weeds can reduce species diversity both in the plant communities where they invade and in the wildlife species using those communities. Weed treatment issues are particularly challenging around Montour because of the abundance of water in the area. Herbicide use near water or in areas where the water table is high and groundwater could be contaminated, is severely restricted and prohibited for some herbicides. However, herbicides have been the primary method of weed control. Other options, such as mechanical or biological controls, must be used to enhance water approved herbicides.

No designated critical habitats for rare and sensitive plant species occur within the project area. No rare plant species are known to occur within the specific project site, and none were noted within the specific project site during field visits.

3.5.2 Environmental Consequences

3.5.2.1 No Action Alternative

The No Action Alternative should have no impacts to existing vegetation facility grounds and the surrounding area would be undisturbed.

3.5.2.2 Proposed Action Alternative

Under the proposed action, little or no disturbance to sagebrush-steppe vegetation is likely to occur. The area where the proposed relocated administration building is to be sited is partly a denuded area and partly asphalted parking area. Given the low probability that the above listed vegetation occurs within the immediate project area, and the lack of impacts to natural vegetation types, Reclamation has determined that implementation of the Action Alternative would not impact natural vegetation. The site location is already situated on disturbed ground and no other vegetation should be affected.

3.5.3 Mitigation Summary

Although facility vegetation is already minimal and little to no disturbance should occur within the existing facilities, Reclamation will proportionally implement a vegetation program re-introducing appropriate native vegetation to those areas previously disturbed or disturbed during construction activities (where practical). The implementation and adherence to Best Management Practices (BMPs) such as revegetation of native species matched for site drainage,

climate, shading, and resistance to erosion, soil type, slope, aspect, and other similar practices make it possible to avoid formal mitigation measures.

3.6 Fish & Wildlife

Threatened and Endangered Species are addressed in a separate section (3.7)

3.6.1 Affected Environment

Fish

Historically, the resident native fish community of the Payette River supported migratory and resident forms of bull trout, redband trout and migratory salmon and steelhead, which were eliminated in the drainage by the construction of Black Canyon Diversion Dam. Mountain whitefish, largescale sucker and bridgelip sucker, northern pikeminnow, chiselmouth, redside shiner, longnose and speckled dace, mottled sculpin, shorthead sculpin, peamouth, and white sturgeon were historically also present (BPA 2003).

Due to the wide range in elevation, the Payette River has a variety of fish and fish habitats. Currently, Black Canyon Reservoir provides only marginal fish habitat. Sand from upstream land disturbances has covered most habitats. From its mouth upstream to Black Canyon Dam, the river supports a mixed fishery of coldwater and warmwater species. Mountain whitefish constitute the primary game fish in this section of river, with smallmouth bass, largemouth bass, channel catfish, black crappie, rainbow trout, and brown trout making significant contributions. Upstream from Black Canyon Dam, the gradient of the river increases with coldwater species increasing in abundance. The South Fork of the Payette River supports excellent populations of wild rainbow trout. The North Fork of the Payette River has been severely altered by railroad and highway construction and provides only a marginal fishery for salmonids. In unaltered sections, such as the Cabarton reach on the North Fork, these areas are very productive for salmonids primarily whitefish. Squaw Creek a tributary at the upper end of the reservoir supports bull trout in the upper reaches (Reclamation 2004).

Wildlife

Wildlife present in the surrounding project area include: 13 mammalian species and fur bearers including river otters in the Payette River. However, most are not present in the area of impact due to the continued presence and activities that are associated with the operations of the existing powerplant facilities. The Montour WMA Management Activity Plan indicates that 10 species of bats occur in that area (Reclamation 2006). All would be expected to occur in the surrounding project area. Several of these are considered to be sensitive species by the BLM. Many species of wildlife, including mule deer and a variety of birds and mammals, inhabit the sagebrush-grass community that borders the south side of the valley adds to the vegetation diversity of the area. A small resident herd of about 25 whitetail deer are also in the area. A few mountain lions could be expected in the area during the winter when deer are concentrated. The sagebrush-grass community also provides escape cover for pheasants during the fall and winter months, however, habitat quality on most of the uplands has been substantially reduced by livestock grazing.

The WMA management plan lists 17 species of eagles and hawks and 8 species of owls in the surrounding area. Thirty-five species of waterfowl, wading birds, shorebirds, and other water-related species have been reported, along with 8 woodpecker species. Of particular concern is the

presence of introduced bullfrogs because of their ability to eliminate native amphibians, which are suffering population declines on a global scale (Kiesecker et al. 2001). IDFG has indicated that bullfrogs are present in the wetlands at Montour.

More than 100 species of migratory songbirds are listed as being present along the Payette River. Executive Order (EO) 13186 defines the responsibilities of Federal agencies to protect migratory birds under the four Migratory Bird Treaties (MBT), to which the United States is a signatory. The EO mandates that all Federal agencies cooperate with the U.S. Fish and Wildlife Service (FWS) to increase awareness and protection of the nation's migratory bird resources.

There are several wildlife species considered sensitive (but not Federally listed) that potentially occur in the project area including: Yellow-billed cuckoo (*Coccyzus americanus occidentalis),* Northern goshawks (*Accipiter gentilis*), ferruginous hawk (*Buteo regalis*), Long-billed curlew (*Numenius americanus*), spotted frog (*Rana luteiventris*) and several bat species.

3.6.2 Environmental Consequences

3.6.2.1 No Action Alternative

Under the No Action, there would be no construction of a new separate third hydroelectric unit, the switchyard would remain where it is with its safety issues, the trash-rake would not be installed to remove woody debris from the up-stream face of the dam, and the administration/maintenance shop building would remain in its present location. The Black Canyon Diversion Dam and Powerplant would continue to be operated and managed as it currently is. For fisheries, there would be no change in fish populations or habitat in this reach of the Payette River. Fish habitat would continue to be influenced by the amount of runoff in the basin and corresponding river flows and minimal levels of sedimentation may affect aquatic species. For wildlife species, there would be no change in their habitat or distribution from what exists today.

3.6.2.2 Proposed Action Alternative

The proposed action intends to install Francis-type turbines spiral cases which have a tendency to entrain fish. Since most of the fish within Black Canyon Reservoir are likely to be small individuals, the probable percentage rate of entrainment mortality associated with Francis-type turbines would be low. Of these small numbers many would likely be mountain whitefish, rainbow trout and other nongame species and non-ESA listed species. Loss of these fish is not expected to have a noticeable impact on the fisheries of the Payette River below the Dam. Mountain whitefish and to a lesser degree rainbow trout are able to spawn in the river, and the loss of a small percentage of fish from upstream reaches would probably have immeasurable effect on these populations. Most of the rainbow trout below the dam are stocked fish.

Because Black Canyon Reservoir is not a flood control reservoir flows are maintained throughout the year. Under the Proposed Action regular operations of the reservoir pool would be maintained at similar time frame as the operation under No Action. This would preserve sufficient habitat for aquatic species that inhabit the river reach within the project area. If flows are adjusted for the project construction period the effects would be temporary and would not have any measureable impacts to fish populations.

Some temporary impacts to wildlife may occur during construction, such that construction noise and activity would cause most species to avoid the area. Some wildlife could become habituated

to the disturbance. Small mammals, reptiles and amphibians may be inadvertently injured or killed by the construction activities. Most of these animals should leave the area as construction progresses. Construction is planned when river flows are lowest. By the time construction begins migratory birds would be finished nesting. During construction activities, care would be taken to minimize harassment or injury to wildlife.

Blasting, as described in Chapter 3.4 - Noise, may have a short-term but adverse impact to resident fish in the immediate reservoir area; even though the main blasting area is approximately 60-feet away. The adverse effect of underwater blasting on fish has been extensively documented. Swim bladder rupture caused by rapid contraction and overextension in response to the explosive shock waveform is the most common cause of mortality and injury to fish (Wiley et al. 1981). Hemorrhaging in the pericardial and coelomic cavities is also commonly observed injuries. Damage to the kidney, liver, and spleen has also been observed, and are possibly related to the rapid contraction and expansion of the swim bladder (Keevin and Hempen 1995). Teleki and Chamberlain (1978) found that the magnitude of the blasting effect on fish depends on several physical and biological characteristics including detonation velocity, density of material to be blasted, and charge weight. Additionally, fish shape, swim bladder development, and location of the fish in the water column are important biological characteristics. The explosion pressure wave and resulting fish kill is influenced by the interaction of additional physical components including the type of explosive, water depth, and bottom composition (Teleki and Chamberlain 1978).

Since the main blasting area is approximately 60-feet away, the detonation velocity would be minimal due to distance and the fact that the water level will be low in the tailrace area.

3.6.3 Mitigation Summary

There is currently no specific mitigation proposed for the minor loss of native fish that would occur under the Proposed Action Alternative. However, since the main blasting area is approximately 60-feet away, the detonation velocity would be minimal due to the distance and the fact that the water level will be low in the tailrace area. Therefore overall impact is expected to be relatively minor. However, if there is any game fish mortality in this area, the quantity of those fish would be counted and replacement fish stocked after construction is completed. To date IDFG has not notified Reclamation that a fish screen or fish-way providing passage is warranted for the minor loss of fish from operation of the new turbine generator. Turbine-passage losses can be mitigated by reducing the numbers of entrained fish (e.g., by improved fish screens or other measures to divert fish from the intake, collection and transport, and/or spillway passage). Alternatively, mortality may be lessened by improving passage conditions within the turbine.

3.7 Threatened and Endangered Species

3.7.1 Affected Environment

Federal protection is afforded to those species listed or proposed as Threatened or Endangered by the FWS under the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884). In March 2005 the Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) provided Biological Opinions (Opinion) on Reclamation's Operations and Maintenance

of 12 projects and associated facilities in the Snake River Basin above Lower Brownlee Reservoir. If the status quo continues, these Opinions should be valid for 30 years. The FWS determined in the BO that Reclamation's proposed operation actions including the Boise Project were not likely to jeopardize the continued existence of ESA listed species in the Snake River basin. NMFS concluded that Reclamation's proposed actions were not likely to jeopardize the continued existence of the 13 salmon and steelhead evolutionarily significant units (ESUs) or adversely modify or destroy critical habitat that is designated for 3 of the ESUs. A summary of its conclusions is contained in Section 8 of the Opinion. The Opinion includes an Incidental Take Statement with Reasonable and Prudent Measures and associated Terms and Conditions to minimize incidental take for bull trout and Utah valvata. Reclamation provided a Decision Document in November of 2005 as well as a Monitoring and Implementation Plan in March of 2006.

Outside the immediate project area, there are several Threatened and Endangered Species (TES) of flora and fauna potentially occurring along the Payette River. Species listed with a Federal designation can be considered listed, proposed or candidate species or they can have designated or proposed critical habitat. Species presence data from State and Federal sources, such as the FWS, Reclamation, and IDFG, have been reviewed. In total, two Threatened species (1 fish and 1 plant species) and two Candidate species (1 mammal and 1 bird) are known to potentially occur within the project area.

The following species listed by the U.S. Fish and Wildlife Service (FWS) for Gem County as of July 08, 2010 under the Endangered Species Act (ESA) either may occur in the project area or have the potential to be affected:

Bull Trout (Threatened)

Slickspot peppergrass (Threatened)

Southern Idaho Ground Squirrel (Candidate)

Greater Sage Grouse (Candidate)

Bull Trout (*Salvelinus confluentus*) – Threatened

Columbia River Basin bull trout (*Salvelinus confluentus*) were listed by the FWS as threatened in 1998 (64 Federal Register 111, June 10, 1998). In 1999, FWS determined threatened status for all populations of bull trout within the coterminous (lower 48) U.S. (64 Federal Register 210, November 1, 1999). The FWS proposed the designation of critical habitat and announced the availability of a draft recovery plan for Columbia River Basin bull trout in 2002 (67 Federal Register 230, November 29, 2002; FWS 2002a).

Black Canyon Reservoir, the Payette River downstream of Black Canyon Reservoir, and the Payette River between Black Canyon Reservoir and the confluence of the North and South Forks of the Payette have not been proposed as bull trout critical habitat or identified as bull trout core areas (FWS 2002a).

Proposed critical habitat includes portions of the Squaw Creek watershed from the confluence of Squaw Creek with the Payette River (Black Canyon Reservoir) upstream. Squaw Creek enters Black Canyon Reservoir from the north. Black Canyon Reservoir and the Montour WMA are located within the proposed boundary of the Payette River Recovery Subunit for bull trout.

However, they have not been proposed as critical habitat or identified as bull trout core areas (Reclamation 2004).

Threats to bull trout include land management practices such as logging, grazing, and road construction, where such practices have degraded habitat through increased sedimentation of spawning gravels, high stream temperatures, and poor water quality (FWS 2002b). Additional threats to bull trout include dams and other barriers (such as impassable culverts) that block adult migrations and access to spawning habitat, and introduced non-native fishes (such as brook trout) that can hybridize with, compete with, and prey on bull trout (FWS 2002b).

Recent limited surveys indicate bull trout are uncommon in Black Canyon Reservoir according to the FWS (1998). Given the cold, clean, and generally complex habitat requirements of this species as opposed to the warm water, sedimentation, and marginal fish habitat associated with Black Canyon Reservoir and waters immediately below the dam within the project area this conclusion is not unexpected (Reclamation 2004).

Slickspot peppergrass (*Lepidium papilliferum*) – Threatened

Slickspot peppergrass was elevated from a proposed endangered species to a threatened species in a decision published in the October 8, 2009, Federal Register, effective December 7, 2009. Habitat consists of openings in sagebrush stands that are protected from wind, but not from sun. The micro-sites (openings) in which slickspot peppergrass occur are much higher in clay than the surrounding sagebrush-shrub communities which are generally on well-drained soil sites. These openings or “slickspots” which give the species its name are restricted to a clay layer that is able to hold water. The western Snake River Plain and adjacent northern foothills in Payette, Gem, Canyon, Ada, and Elmore counties in Idaho are the main distribution range of slickspot peppergrass. Reclamation-administered land surrounding Black Canyon Reservoir and Montour WMA contains a relatively narrow fringe of sagebrush-steppe habitat and most of these areas are on relatively steep slopes which are generally poorly suited for slickspot peppergrass. While no specific surveys have been conducted, it is unlikely that slickspot peppergrass occurs within the immediate project area.

Southern Idaho Ground Squirrel (*Spermophilus brunneus endemicus*) – Candidate Species

As of 2009, the Southern subspecies is listed as a candidate species and a state "species of special concern", based on the limited range and low population numbers of species. Candidate species receive no protection under ESA, but are included for yearly planning consideration and evaluation during NEPA processes. The extent of occurrence for both the Northern and Southern subspecies is less than 5,000 km², its range is severely fragmented, and there is an ongoing decline in the extent and quality of its habitat (Yensen et. al. 2008). The southern subspecies can be found in an area about 30 by 70 kilometers (48 by 113 miles) of patchy distribution at lower elevations (670-975m) north of the Payette River extending from Emmett, Idaho northwest to Weiser, Idaho and the surrounding area of Squaw Butte, Midvale Hill, and Henley Basin in Gem, Payette, and Washington counties. Its range is bounded on the south by the Payette River, on the west by the Snake River and on the northeast by lava flows (FWS 2009). Their habitat is typified by sagebrush and native bunchgrasses, but the current vegetation consists of annual grasslands composed of introduced grasses. The conversion of shrub steppe habitat to agriculture, poisoning, and degradation of remaining rangeland habitat, mainly by the invasion of exotic annual grasses such as cheatgrass and medusahead and the loss of shrubs have contributed to the declines of the Southern Idaho subspecies. This squirrel’s current threat is associated with its

small population size (USFWS 2004) (Yensen et. al. 2008). Due to the developed nature of the facilities below Black Canyon Dam it is unlikely that the Southern Idaho ground squirrel occurs within the project area.

Greater Sage-Grouse (*Centrocercus urophasianus*) – Candidate Species

Greater Sage-Grouse has been listed as a candidate species in a decision published in the March 5, 2010 Federal Register. Sage-grouse once were abundant in sagebrush habitats of the western United States and Canada. Unfortunately, the bird and its habitat have declined in abundance. In Idaho, threats to sage-grouse populations include: wildfire, infrastructure development - power lines & wind farms, annual grasslands, livestock impacts, human disturbance, West Nile virus, prescribed fire, seeded perennial grasslands, climate change, and conifer encroachment.

Lek (spring mating ground) data and documentation is minimal for this species within Gem County and the vicinity of the project area and are too inconsistent to develop a trend graph. Most of the closest recorded sightings are near Midvail and Cambridge area in Washington County. Due to the developed nature of the facilities surrounding Black Canyon Dam it is unlikely that the Greater Sage-Grouse occurs within the project area.

Anadromous Fish

Prior to dam construction, salmon and steelhead dominated the fish community of the Payette River drainage according to early sources from the Columbia Basin Inter-Agency Committee of the late 1940's and early 1950's (Allen 2003). At least three species of anadromous fish utilized the Payette River, including Chinook salmon, sockeye salmon, and steelhead trout. Pacific lamprey may have also been present. Black Canyon Dam was the first barrier to salmon migration up the Payette River. Shortly after the dam was completed in 1924, few if any salmon remained in the Payette River. Despite the loss of anadromous populations, the Payette River continues to support a diverse native fish community.

There are no anadromous fish species listed by NMFS within the immediate Proposed Action area, however due to downstream salmon flow augmentations, potentially affected anadromous fish species include:

Snake River sockeye (endangered)

Snake River spring/summer Chinook (endangered)

Snake River steelhead (threatened)

Upper Columbia River spring Chinook (threatened)

Upper Columbia River steelhead (endangered)

Lower Columbia River steelhead (endangered)

Middle Columbia River steelhead (endangered)

Columbia River chum salmon (threatened)

None of the listed salmon and steelhead species occurs in the immediate project area, and the final critical habitat for the Snake River salmon does not include the Payette River. Reclamation is required under NMFS and the subsequent Opinion (2005) to manage and release 427,000 af from the Upper Snake River Basin (including the Payette River) to aid juvenile salmon and steelhead migration.

3.7.2 Environmental Consequences

3.7.2.1 No Action Alternative

Under the No Action alternative, there would be no construction of a new separate third hydroelectric unit, the switchyard would remain where it is with its safety issues, the trash-rake would not be installed to remove woody debris from the up-stream face of the dam, and the administration/shop building would remain in its present location. Bull trout and any critical habitat for bull trout would be not become affected due to their location well above the Black Canyon Dam. There would be no effect to listed anadromous fish as they are currently covered under the existing March 2005 operations opinion. There is no known documentation of Bull Trout, Slickspot Peppergrass, Southern Idaho Ground Squirrels or Greater Sage Grouse within the section of the Payette River immediately below the dam or in the lands surrounding the plant therefore there would be no effect on these species.

3.7.2.2 Proposed Acton Alternative

Under the Proposed Action, the construction of a new separate third plant and its subsequent operational needs may have a temporary affect to the aquatic and terrestrial resources in the project area; but these are expected to be minimal. Fish and wildlife in the immediate project vicinity may be temporarily displaced during the construction period; but they normally avoid such disturbances and the construction at the proposed work site is adequate to allow for avoidance of in-stream construction activities. The operation of the additional plant may minimally change the amount of flow over the spillway, but Reclamation's ability to provide flow augmentation for downstream anadromous fish species would not be affected, and there would be no significant effect to listed anadromous fish under the Proposed Action. There would also be no effect to populations of Bull Trout, Slickspot Peppergrass, Southern Idaho ground squirrels or Greater Sage Grouse since they are also not known to occur within the immediate project area.

3.7.3 Mitigation Summary

There is currently no mitigation proposed for threatened or endangered species as they are not expected to be impacted by the construction or operation of the third plant and its associated facilities. Water flow operations will continue as they currently exist to provide flow augmentation for downstream anadromous fish species, in accordance with the March 2005 operations opinion.

3.8 Cultural Resources

3.8.1 Affected Environment

In 1925, the Black Canyon Dam Powerplant, located at the base of the dam, went into operation to supply power directly to the Boise Project, and, by contractual agreement for transmission line use with Idaho Power Company, to the Owyhee and Minidoka Projects as well. Following the architectural style of its previous plants (e.g. Minidoka), Reclamation built the Black Canyon Dam plant as a plain, rectangular, utilitarian, reinforced concrete structure with a low-pitched gable roof. The original purpose of the plant was to supply energy to the Irrigation Districts to

pump water to irrigation canals, with any excess power to be marketed. Currently (and as originally designed), two 8-foot diameter penstocks carry water from the reservoir through the dam to the two generators in the power house. Two 5-foot diameter steel pump-penstocks carry water to the hydro pumps. Each of these pipes has a motor operated slide gate on the upstream side of the dam that can be closed for maintenance or to reduce flood damage. A trash rack in the reservoir prevents entrance of logs and other large debris into both the power and pump penstocks. The dam also utilizes triangular drum gates at the top of the spillway and two 5-foot diameter sluice gates that pass straight through the dam near river elevation.

During the winter of 1951 and 1952, additional construction was undertaken at the dam. Flashboards (8 inch steel plates) were welded onto the drum gates, raising the crest to an elevation of 2,497.5 feet. Excessive water force directly below the spillway brought concerns of uplift pressure and structure instability, and actually broke a window on the power house. The spillway was modified by drilling additional foundation drain holes in the gallery and the downstream face of the dam. A concrete slab was also placed on the downstream face to fill the eroded areas and prevent further deterioration. In the late 1990's, Reclamation increased the level of the reservoir by 6 inches, which necessitated a 6-inch raise to the concrete wall of the debris flume. A number of other small operations and maintenance activities have also taken place over the years at both the dam and plant to facilitate ongoing utilization of those structures, none of which caused adverse effects to either's historic integrity.

Black Canyon Diversion Dam and plant were officially determined to be eligible for the National Register of Historic Places (NRHP) by the Idaho SHPO on August 22, 1998. This eligibility was based on the pivotal role that the dam and plant played in the development of the Payette River Valley, the exceptional condition and physical appearance of the original structures and their equipment, and the historic and technological contributions to dam design and construction.

No archaeological or other cultural resources of National Register eligibility exist within the area of potential effect of this proposed project.

3.8.2 Environmental Consequences

3.8.2.1 No Action Alternative

For the No Action Alternative, there would be no construction of a new separate third hydroelectric unit, the switchyard would remain where it is with its safety issues, the trash-rake would not be installed to remove woody debris from the up-stream face of the dam, and the administration/shop building would remain in its present location. All the existing structures would remain in their current condition, except for routine maintenance and repair. Any potential impacts to the historic dam and plant would be avoided, and the properties' historic integrity would be unaffected.

3.8.2.2 Proposed Acton Alternative

Consultation with the Idaho SHPO for this proposed project is ongoing, but some initial consultation has already been conducted (see Appendix B). The proposed action would be deemed an adverse effect to the historic integrity of the dam and existing plant. This determination is based upon the fact that completion of the action will result in the alteration of part of an original significant historic structure (drilling a hole in the dam) and negative visual impact to a second significant historic structure (the existing plant) which would be reduced

through mitigation, so only minor impacts to the historic value of the Boise Project components would occur, overall. Based on the potential of implementing this project or to address any future action at the facility, a Historic American Engineering Record (HAER) study and document will be implemented.

The construction of a new powerhouse will partly obstruct the view of the existing plant, which is in good condition and contains original equipment installed in 1925. Reclamation will take steps to lessen the visual impact of the new powerhouse building in two ways. First, it will be offset from the front of the existing powerhouse so as not to obstruct the public's view; and second, it will be architecturally designed to capture the look and feel of the existing historic structure. The design team is sharing preliminary drawings with the SHPO for comments. Relocation of the existing switchyard will be to the north of the existing structures and should not detract from the historic feeling of the current setting. The existing administration building, which is not considered an historic property of any significance, would be demolished. Relocation of the administration building (new construction) that would be sited to the south and west of its current location—and outside of the current fenced-in facility area—would likely not visually impact the historic area of the powerhouse.

Additional consultation with the Idaho SHPO will continue prior to the commencement of any construction activities, and it is possible that further impacts will be identified.

3.8.3 Mitigation Summary

Due to the fact that the proposed action alternative will adversely impact the identified historic properties, Reclamation has committed to implementing a HAER study and document. If a new powerhouse is constructed, then Reclamation will lessen the visual impact of the new powerhouse building by offsetting it from the existing powerhouse building and have its exterior architecturally designed to capture the look and feel of the existing historic structures.

Additional consultation with the Idaho SHPO will continue prior to the commencement of any construction activities, and it is possible that further mitigation will be identified, which will be outlined in a Memorandum of Agreement with SHPO as per the implementing regulations outlined in 36 CFR 800.6(b)(iv).

3.9 Sacred Sites and Traditional Cultural Properties

3.9.1 Affected Environment

Sacred sites are defined in Executive Order (EO) 13007 as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian Tribe, or an Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion..." Under Executive Order 13007, Federal land managing agencies must accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites (Reclamation 2004).

Natural features and locations along the Payette River area landscape within the vicinity of Black Canyon Reservoir have held spiritual or religious significance to aboriginal tribes. These properties might include altars, vision quest sites, burial sites, and river and rock geographic

features, among others. Regan Butte, a prominent geographic feature overlooking the Montour Valley, has a unique characteristic: a large hole in the vertical basalt columns near the peak affords a view through the rock from great distances (Morgan 1999).

3.9.2 Environmental Consequences

3.8.2.1 No Action and Proposed Action Alternatives

As part of its scoping process, Reclamation requested information from Tribes that traditionally and currently use the area, no response was received. The lack of specific information about the area is not indicative of a lack of importance to Tribes. With no specific response Reclamation assumes that there will be no adverse effects to culturally important areas with this project.

3.9.3 Mitigation Summary

No mitigation measures are proposed.

3.10 Indian Trust Assets

Indian Trust Assets are legal interests in property held in trust by the United States for Indian tribes and individuals. The Secretary of the Interior, acting as trustee, holds many assets in trust for Indian tribes and individuals. Examples of trust assets are lands, minerals, grazing, hunting, fishing, and water rights. While most Indian Trust Assets are on-reservation, they may also be found off-reservation on federally managed unoccupied lands.

The United States has a responsibility to protect and maintain rights reserved by or granted to Indian tribes and Indian individuals by treaties, statutes and executive orders. These are sometimes further interpreted through court decisions and regulations.

3.10.1 Affected Environment

Black Canyon Diversion Dam is located in an area historically used by many tribes. The Shoshone-Bannock, Nez Perce, and the Shoshone-Paiute Tribes are all Federally recognized tribes. These tribes all have some variation of treaties which allow them the right to hunt/fish and/or gather and graze livestock on open unclaimed or unoccupied (Federal) lands of the United States. However, within the immediate project area, the facilities at Black Canyon Dam are not open to hunting and fishing by anyone due to safety concerns.

3.10.2 Environmental Consequences

3.10.2.1 No Action and Proposed Action Alternatives

There is no universally accepted understanding of any specific tribal off-reservation treaty rights to hunt and fish in the vicinity of Black Canyon Diversion Dam. Thus implementing either the No Action or proposed action alternative would not affect tribal hunting and fishing rights in the area.

3.10.3 Mitigation Summary

No mitigation measures are proposed.

3.11 Environmental Justice

Executive Order 12898 (Environmental Justice, 59 Federal Register 7629 [1994]) requires Federal agencies to achieve environmental justice by addressing "disproportionately high and adverse human health and environmental effects on minority and low-income populations." To determine if environmental justice populations are present, the Federal agency examines the demographics of the affected area to determine if minority (including Native American) and/or low-income populations are present. If present, the agency must determine if construction of the proposed action would cause disproportionately high and adverse human health or environmental effects on the populations.

3.11.1 Affected Environment

Minorities

Table 3-1 summarizes the racial characteristics of Emmett, Gem County within the project area and compared to Idaho overall. Information contained in the 2005-2009 Census of Population was used to identify these populations. The 2005-2009 Census data for the white racial category comprises the highest percent for Emmett, Gem County and Idaho (Census 2009).

By definition from the Federal office of Management and Budget, race and Hispanic or Latino origin are two separate categories. People who report themselves as Hispanic or Latino can be of any race. Therefore, in Table 3-1, the number of Hispanic or Latino is not added to the totals of the "race" columns. For example, Hispanics and Latinos who are "white" are counted in the total of "white" in the race table; and Hispanics who are "black or African American" are counted in that race category.

U. S. Census Bureau 2005-2009 Statistics	Emmett	Gem	Idaho
Total Population, 2005-2009 estimate	6,232	16,355	1,492,973
White	5,772	15,464	1,374,415
American Indian or Alaska Native	13	33	18,352
Asian	0	9	16,739
Black or African American	0	0	9,030
Native Hawaiian or Pacific Islander	48	48	1,827
Some other race alone	84	342	35,706
Two or more races	315	459	36,454

Table 3-1. Summary of Racial Populations in Emmett and Gem Counties

Low-Income Populations

According to the Census Bureau, 19.1% of individual residents in Emmett had income below the poverty level in 2009 compared to Gem County 12.8% and the State of Idaho at 13.5%. For Families below the poverty level Emmett was 17.3%, Gem County 9.7 %, and the State of Idaho at 9.5 %.

3.11.2 Environmental Consequences

3.11.2.1 No Action and Proposed Action Alternatives

The information indicates that there are few, if any, minority populations in or near the project area. The impacts associated with either alternative would affect persons of all races in the same manner and would not result in any disproportionately high and adverse impacts on particular minority populations.

Construction of the proposed action would not require the relocation of any residents, so no low-income households would be directly affected by the project. Construction-related impacts, such as those associated with fugitive dust and noise and temporary road closures during construction, could temporarily affect these residents and would affect all residents in the same manner, regardless of income. Construction of the proposed action would not result in any significant and adverse impacts on any low-income populations.

3.11.3 Mitigation Summary

No mitigation is proposed because there are no environmental justice populations in the area, and therefore no impact on any environmental justice populations.

3.12 Socioeconomics

3.12.1 Affected Environment

Current population trends, employment, and income for Gem County and nearby Ada, Canyon, and Payette counties are discussed below. Ada County, which contains the city of Boise and neighboring suburban communities, has a large population and thus a significant impact on use of Black Canyon Reservoir, particularly for recreation purposes.

Population

According to the U.S. Census Bureau, the population of the State of Idaho between 2000 and 2009 grew from 1,293,953, to 1,545,801 an increase of 251,848 people. Gem County is the 19th most populous of Idaho's 44 counties and the fifth smallest geographically with 38 percent owned by the federal government. People moved into the county to escape the crowds and congestion while at the same time enjoy a more rural lifestyle than the nearby metropolitan areas provided. The population steadily increased through 2007 before flattening in 2008 as the economy slowed. From 2000 to 2009 Gem County's population grew from 15,181 in 2000 to 16,355 in 2009. Most of the population in southwest Idaho is located south of Gem County along the Interstate 84 (I-84) within Ada and Canyon counties in cities such as Boise (population 205,314), Nampa (population 79,249), and Meridian (population 64,642)

(U.S. Census Bureau 2009). As growth in these nearby population centers slowed, the overflow into Gem County declined.

The statistics for residents in Gem County as of July 2009 are:

Total population: 16,355

Median age: 41.2

18 years and older: 74%

65 years +: 17.4%

Source: Population Division, US Census Bureau 2005-2009

Economy

The closest city to Black Canyon Reservoir is Emmett (population 6,232), the county seat of Gem County (U.S. Census Bureau 2009). Nearly one third of Gem County's population resides in Emmett, making it the county's largest city. Emmett is located in the "Valley of Plenty," made possible by the development of an irrigation canal system that has diverted water from the Payette River and Black Canyon Reservoir since the late 1800s when the valley began to be settled. In the early 1900s, the irrigation canal system continued to be expanded; by the 1920s, the valley was producing an abundance of orchard fruit, specifically cherries and apples. After an economic decline, brought on by the Great Depression and years of exceptional drought in the 1930s and 1940s, the economy rebounded in the 1950s. Since then, the economy has been based on agriculture, timber, and mining, each benefiting from technological advances and providing for a growing post-World War II population.

More recently, however, the area's economy has begun to diversify by shifting from resource-based manufacturing to government, services, and wholesale and retail trade. Gem County experienced a gain in population since 1990 but did not receive an equal gain in economic benefit during this time. This is due to an increasing number of Gem County residents who choose to commute out of the county to work and shop (primarily in Ada County, where Boise and its suburbs are located). Gem County's labor force declined in 2008 by 3.4 percent and the average unemployment rate more than doubled to 6.8 percent. In the last decade, unemployment peaked at 7.2 percent in 2002 before steadily subsiding. Gem County did not have the robust nonfarm job growth in 2007 that many counties in southwestern Idaho did and it suffered the same job erosion in 2008, losing 3 percent of nonfarm jobs. Construction posted the largest decline of 105 jobs, or 26 percent, while all other sectors combined shed just 103 jobs. The construction industry had been the major economic driver in Gem County over the last few years, but despite its steep decline in 2008, there were still 62 percent more jobs in construction than there were in 1998. Fortunately, other sectors added jobs during the year partially offsetting construction's decline, most notably, education and health services increased by 8.8 percent, or 48 jobs. Trade, transportation and utilities made a modest gain during 2008 as well, indicating consumer spending had not dropped enough during the latter half of 2008 to warrant job cuts as it did in many other counties (Idaho Department of Labor 2009).

Agriculture and timber resource products are the two basic local industries, and the timber industry formerly provided the bulk of family wage jobs. However, the timber industry declined because of a lack of a steady supply of logs. As a result, the county's largest employer, Boise Cascade, closed its Emmett mill. The mill later burned in an accidental fire. The amount of land

devoted to fruit cultivation has decreased in the Emmett Valley because acreage formerly used for crops is now being utilized for housing and commercial development (Idaho Department of Labor 2002). After years of significant decline, agriculture which accounts for only 4.5 percent of covered employment, somewhat stabilized in 2008, at essentially the same job level as 2007 (Idaho Department of Labor 2009).

Demographics

Demographic information is from 2005-2009 and not all information is available for this county. The median age of persons in Gem County was 41.2 years, up from 37.5 years in 2000. There were 16,064 households in Gem County with an average of 2.55 persons per household in 2009. The 2009 median household income of Gem County was $41,847, which was below the statewide median household income of $46,183 in 2009. The percentage of individual residents below the poverty level (12.8 percent) was lower than the percent of state residents (13.5 percent) below the poverty level (U.S. Census 2009). In 2009, 81.6 percent of Gem County residents over 25 years of age were high school graduates, and 10.3% had at least a bachelor's degree. By comparison, 87.7% of all Idaho residents over 25 years of age were high school graduates, and 23.7 percent had at least a bachelor's degree. In 2008, 92 percent of Gem County's population was white and 10 percent was Hispanic or Latino.

3.12.2 Environmental Consequences

3.12.2.1 No Action Alternative

For the No Action Alternative, there would be no construction of a new separate third hydroelectric unit, the switchyard would remain where it is, the trash-rake would not be installed to remove woody debris from the up-stream face of the dam, and the administration/shop building would remain in its present location. The economy and demographics would remain as they currently are.

3.12.2.2 Proposed Acton Alternative

Construction activities would bring a temporary economic boost to the local economy. Though the ethnographic demographics would not change much, during the period of construction numerous benefits will be derived from the influx of the working staff, housing, material needs, etc. Over the long term, the "green" process of generating electricity will be a benefit by all in the mitigation of increasing power rates generated by the BPA.

3.12.3 Mitigation Summary

No mitigation is required.

3.13 Cumulative Effects

The Council on Environmental Quality regulation for implementing NEPA defines cumulative effects as "as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions."

The proposed action would have adverse effects to the historic integrity of the plant that are reduced through mitigation with the assistance of the HAER process. With mitigation, effects would result in only minor impacts to the historic value of the proposed action. Otherwise there are no known ongoing, past, or reasonably foreseeable future actions adversely impacting land use, reservoir operations, water quality, vegetation, or fish and wildlife in this reach of the river that would be additive to the effects of the plant project.

Chapter 4 – Consultation and Coordination

4.1 Summary of Public and Agency Involvement

4.1.1 News Briefs

Reclamation first announced its proposal for construction of the third hydroelectric generating unit at Black Canyon Dam through a News Release on July 26, 2010. The announcement stated that the construction of a third hydroelectric generating unit, powerhouse, penstock and associated facilities would utilize flows over the spillway to provide for a pollution free generation of hydroelectric power, while still maintaining flows required for irrigation and salmon augmentation downstream. It also stated that there would be opportunity for public involvement in the upcoming NEPA process.

4.1.2 Scoping Letter

In August of 2010 Reclamation mailed a scoping document to over 62 agencies, Indian tribes, organizations, and individuals soliciting their concerns over the proposed power plant installation. Reclamation consulted with the Idaho SHPO and the Council (November 2010) in the historic documentation of the existing facilities and placement and design of the new facility. This Draft EA will be issued for public review and comment for 30 days, the mailing list for the draft EA is included as Appendix A.

4.2 Agency Consultation and Coordination

On July 8, 2010, Reclamation received an updated list of ESA-listed species potentially within Gem County and the project area. Because of the value of the historic integrity of the existing generating units and surrounding facilities, in November 2010 Reclamation consulted with the Idaho State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (Council) to ensure historic integrity would not be lost through the addition of a new plant (Appendix B).

4.3 Tribal Consultation and Coordination

A letter was sent to the Nez Perce, the Shoshone-Bannock, the Shoshone-Paiute, the Umatilla and the Burns Paiute Tribes November 22, 2010 requesting information or concerns addressed by the Tribes. The letters were followed up with email and telephone calls and no response or concerns were received (Appendix B).

4.4 Distribution List

A copy of this draft EA was mailed to the following agencies, tribes, organizations and individuals:

4.4.1 Federal Agencies and Elected Officials

U.S. Fish and Wildlife Service, Snake River Fish and Wildlife Office

U.S. Environmental Protection Agency, Idaho Operations Office

U.S. Army Corps of Engineers, Boise Regulatory Office

Bureau of Land Management, Boise District

U.S. Forest Service, Payette National Forest

Bureau of Indian Affairs, Fort Hall Agency

Bureau of Indian Affairs, Eastern Nevada Agency

Bureau of Indian Affairs, Northern Idaho Agency

Bureau of Homeland Security

Bonneville Power Administration

U.S. Senator Mike Crapo

U.S. Senator Jim Risch

U.S. Representative Raul Labrador

U.S. Representative Mike Simpson

4.4.2 State and Local Agencies and Officials

Idaho Department of Fish and Game

Idaho Department of Environmental Quality

Idaho Department of Water Resources

Idaho State Historic Preservation Office

Governor, State of Idaho

Idaho State Police

Idaho State Communications

State Senator Tim Corder

State Representative Richard Wills

State Representative Pete Nielson

Gem County Commissioners

Gem County Sheriff's Office

Gem County Disaster Services

Mayor, Emmett

4.4.3 Tribes

Shoshone-Bannock Tribes

Shoshone-Paiute Tribes

Nez Perce Tribe

Umatilla Tribe

Burns-Paiute Tribe

4.4.4 Organizations

Idaho Conservation League

Idaho Rivers United

Idaho Wildlife Federation

Trout Unlimited

Golden Eagle Audubon Society

Boise Valley Fly Fisherman

4.4.5 Individuals and Businesses

William Butticci

Charles Huff

Gregg Martinez

Lon McConnel

David B. Reay

Ron Shurtlett

Roland Radford

Brad Hawkins-Clark

Rick Ward

Brad Smith

Ron Morgan

Chapter 5 – References

References

Allen, Cain. 2003. Replacing Salmon Columbia River Indian Fishing Rights and the

Geography of Fisheries Mitigation Oregon Historical Society Vol. 104. No. 2. 2003.

Bradley, D. 2003. Memo displaying bull trout distribution in the Squaw Creek drainage. Boise National Forest, Fish Biologist, May 15, 2003.

Burton, T.A. 1999c. Biological assessment of ongoing actions, Squaw Creek bull trout subpopulation watershed. Boise National Forest, December 14, 1999, Boise, Idaho.

Boise National Forest. 2003. Fish distribution information from the Boise National Forest Aquatic Survey Database in electronic format. Information on Brook trout compiled by Chris Reighn.

Bonneville Power Administration. 2003. Provincial Project Review PART 2. Narrative Project ID: 32009 Squaw Creek Cooperative Fisheries Restoration Project.

Cada, G. F., C. C. Coutant, and R. R. Whitney, 1997, Development of Biological Criteria for the Design of Advanced Hydropower Turbines. DOE/ID-10578, U.S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho.

EPRI. 1992. Fish Entrainment and turbine Mortality Review and Guidelines Technical Report TR-101231. Electric Power Research Institute, Palo Alto, CA.

Freeman, L. 1999. Lower Payette River Water Quality Status Report; Bacteria and Temperature, 1996-1998. Idaho Department of Health and Welfare, Division of Environmental Quality. Boise, Idaho.

Gillan, Jeffrey K. and Eva K. Strand, 2010 Sage-grouse Habitat in Idaho: A Practical Guide for Land Owners and Managers, University of Idaho Department of Rangeland Ecology and Management, Moscow, Idaho.

Idaho Department of Commerce. 2000, 2007. County Profiles of Idaho: Gem.

Idaho Department of Labor. 2009. Emmett Job Service. Gem County Profile. December 2009.

Illingworth and Rodkin, Inc. 2006. Montezuma Wind Project Noise Technical Report. Solano County, California. Petaluma, California.

Ingham, Michael J. December 1999. Lower Payette River Subbasin Assessment and Total Maximum Daily Load. Prepared For State of Idaho by Idaho Division of Environmental Quality, Boise Regional Office.

Jankovsky-Jones, Mabel. 2001. Prepared for the Idaho Department of Fish and Game. Wetland Conservation Strategy for the Middle and Western Snake River and Lower Reaches of its Major Tributaries Including the Boise River and Payette River. November 2001.

Jimenez, J., and D. Zaroban. 1998. Deadwood, Middle Fork and South Fork Payette Rivers key watersheds bull trout problem assessment. Southwest Basin Native Fish Watershed Advisory Group. November 1998.

Keevin, T.M., and G.L. Hempen. 1995. A Tiered Approach to Mitigating the Environmental Effects of Underwater Blasting. Journal of Explosives Engineering. 13:20-25.

Kiesecker, J.M., A.R. Blaustein, and L.K. Belden. 2001. Complex causes of amphibian population declines. Nature. 410, 681-684.

Mancuso, M. and R.K. Moseley. 1998. An ecological integrity index to assess and monitor Lepidium papilliferum (slickspot peppergrass) habitat in southwestern Idaho. Conservation Data Center, Idaho Department of Fish and Game, unpublished report prepared for State of Idaho, Military Division Memorandum of Agreement NGB 16-97-0001, Task Order - 002. 15 pp., plus appendices.

Moseley, R.K. 1994. Report on the conservation status of Lepidium paplliferum. Status survey report prepared for Idaho Department of Parks and Recreation through Section 6 funding from U.S. Fish and Wildlife Service, Region 1. Idaho Conservation Data Center, Idaho Department of Fish and Game. 35 pp. plus appendices.

Nez Perce Tribe. 1995. Ensuring our Future, Honoring our Past.

Quigley, T.M., and S.J. Arbelbide, eds. 1997. An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins. Volumes 1-4. USDA Forest Service and USDI Bureau of Land Management. Portland, Oregon. PNW-GTR-405.

Shoshone-Bannock Tribes. 1994. Treaty Right Seminar, Pocatello, Idaho, May 18-20. The Shoshone-Bannock Tribes Treaty Rights Seminar Planning Committee.

Steed, R. 1999. Gold Fork and Squaw Creek key watersheds bull trout problem assessment. Southwest Basin Native Fish Watershed Advisory Group. April 1999.

Teleki, G.C., and A.J. Chamberlain. 1978. Acute Effects of Underwater Construction Blasting on Fishes in Long Point Bay, Lake Erie. Journal of the Fisheries Research Board of Canada. 25:1191-1198.

U.S. Census Bureau: State and County QuickFacts. 2000. http://factfinder.census.gov.

U.S. Department of Transportation Federal Transit Administration. 2006. FHWA Highway Construction Noise Handbook. Washington, DC.

U.S. Bureau of Reclamation (Reclamation). 1983. Memorandum of Understanding between the Bureau of Reclamation and the Idaho Department of Fish and Game. August 1983.

----------. 2004. Final Environmental Assessment (EA) on the Resource Management Plan (RMP) for Black Canyon Reservoir and Montour WMA. Boise, ID.

----------. 2004c. Operation Description for Bureau of Reclamation Projects in the Snake River Basin above Brownlee Reservoir.

U.S. Fish and Wildlife Service (USFWS, in litt. 2003). 2003. Southwest Idaho bull trout recovery unit team meeting notes. March 4, 2003.

U. S. Forest Service. 2003. Boise National Forest comments on draft report recovery plan, Chapter 18. Southwest Idaho recovery unit, January 17, 2003 and January 22, 2003.

----------. 2004. To Marilyn Hemker, U. S. Fish and Wildlife Service, Snake River Basin Office; From Trisha Giambra, U. S. Forest Service, Boise National Forest.

Wiley, M.L., J.B. Gaspin, and J.F. Goertner. 1981. Effects of Underwater Explosions on Fish with a Dynamical Model to Predict Fishkill. Ocean Science and Engineering. 6:223-284.

Yensen, E., Hammerson, G., Jefferson, J. & Cannings, S. 2008. Spermophilus brunneus. In: IUCN 2009. IUCN Red List of Threatened Species. Version 2009.2. www.iucnredlist.org Downloaded on 30 December 2009

Glossary

Acquired lands. Lands that the Bureau of Reclamation has acquired by purchase, donation, exchange, or condemnation.

Affected environment. Existing biological, physical, social and economic conditions of an area subject to change, both directly and indirectly, as the result of a proposed human action. Also, the portion of an environmental document describing current environmental conditions.

Alternative. A proposition or situation offering a choice between two or more proposals, only one of which may be chosen; an opportunity for deciding between two or more courses or propositions.

Archaeological site. A discrete location that provides physical evidence of past human use.

Archaeology. The study of human cultures through the recovery and analysis of their material relics.

Baseline. The set of starting conditions from which changes and impacts are quantified.

Best Management Practices (BMPs). Activities that are added to typical operation, construction, or maintenance efforts that help protect environmental resources by avoiding or minimizing impacts of an action.

Cultural resources. Archaeological, historical, architectural, and traditional properties that reflect our heritage.

Dominant species. A plant species that exerts a controlling influence on or defines the character of the plant community.

Endangered species. Any species of plant or animal that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified by the Secretary of the Interior as endangered in accordance with the 1973 Endangered Species Act.

Federal lands. Lands, or interests in lands (such as easements and rights-of-way), owned by the United States.

Geographic Information System (GIS). A system of computer hardware, software and data for collecting, storing, analyzing and disseminating information about areas of the earth. From this, GIS can display attributes such as road networks and analyze results electronically in a map form.

Habitat. Area where a plant or animal finds suitable living conditions.

Indian sacred sites. Defined in Executive Order 13007 as “any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion;

provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site."

Indian Trust Assets (ITAs). Legal interests in property held in trust by the United States for Indian tribes or individuals, such as lands, minerals, hunting and fishing rights, and water rights.

Land use. The way the land is used in terms of the types of activities allowed (e.g., agriculture, residences, industry) and the size of buildings and structures permitted. Certain types of pollution are often associated with particular land uses, such as sedimentation from construction or farming activities.

Mitigation measures. Action taken to avoid, reduce severity of, or eliminate an adverse impact. Mitigation can include one or more of the following: (1) avoiding impacts; (2) minimizing impacts by limiting the degree or magnitude of an action; (3) rectifying impacts by restoration, rehabilitation, or repair of the affected environment; (4) reducing or eliminating impacts over time; and (5) compensating for an unavoidable impact by replacing or providing substitute resources or environments to offset the loss.

National Register of Historic Places (National Register). A Federally maintained register of districts, sites, buildings, structures, and properties that meet the criteria of significance defined in 36 CFR 63.

No Action Alternative. The outcome expected from a continuation of current management practices.

Noxious weeds. A plant species that is undesirable, conflicts, restricts, or otherwise causes problems with intended land use goals and objectives.

Project purposes. Lands are withdrawn and acquired for authorized purposes of the specific Reclamation project. These can include irrigation, flood control, recreation, and fish and wildlife.

Proposed Action. The proposal or proposed project by the sponsoring agent or proponent.

Public involvement. The systematic provision for affected publics to be informed about and participate in Reclamation decision-making. It centers around effective, open exchange and communication among the partners, agencies, organizations, and all the various affected public lands.

Reclamation. Returning disturbed land to a form and productivity that will be ecologically balanced and in conformity with a predetermined goal and land use objective.

Reclamation Project Lands. Federal lands or interests in lands under the jurisdiction of the Bureau of Reclamation. Includes withdrawn lands, acquired lands, and 1890 Act reserved rights-of-way that have been exercised.

Note: Reclamation Project Lands **are not** the same as public lands. Reclamation Project Lands were initially withdrawn, acquired, or exercised for specific project purposes, and are governed by different Federal land management laws and regulations than public lands. Public uses of

Reclamation Project Lands can be suspended as necessary to protect project facilities, and Reclamation Project Lands are not open to off-road vehicles unless specifically opened for that use.

Scoping. Process established to incorporate public input regarding proposed activities disclosed in a NEPA document.

Threatened species. Any species that has the potential of becoming endangered in the near future and is listed as a threatened species under the Endangered Species Act.

Upland. Any area that does not qualify as a wetland because the associated hydrologic regime is not sufficiently wet to elicit development of vegetation, soils, and/or hydrologic characteristics associated with wetlands. Such areas occurring within floodplains are more appropriately termed non-wetlands.

Chapter 6 – List of Preparers

Name	Background	Responsibility
Bureau of Reclamation		
Gretchen Fitzgerald	NEPA Specialist	NEPA Manager, Senior Review
Jenny Huang	Archaeologist	Cultural Resources
Teneal Jensen	Archaeologist	Native American Affairs Coordinator
Robert Adams	Manager	Project Manager
John Tiedeman	Biological Sciences	Activity Manager
Jerry Gregg	Agricultural Engineer	Manager Snake River Area Office

Appendix A - ESA Consultation

United States Department of the Interior
IDAHO FISH AND WILDLIFE OFFICE
1387 S. Vinnell Way, Room 368
Boise, Idaho 83709
Telephone (208) 378-5243

JUL 0 8 2010

Memorandum

To: Area Manager, Snake River Area Office, Bureau of Reclamation Boise, Idaho (Attention: Lesa Stark)

From: Acting State Supervisor., Idaho Fish and Wildlife Office, Fish and Wildlife Service, Boise, Idaho

Subject: Semi-annual Species List Update
CONS-250c

The Idaho Fish and Wildlife Office of the Fish and Wildlife Service (Service) is providing you with an updated list of threatened, endangered, proposed, and candidate species that occur in Idaho. This memorandum and list are being provided to your agency via electronic mail.

Recent changes in species and critical habitat status are as follows:

Greater sage-grouse *(Centrocercus urophasianus)* has been listed as a candidate species under the Endangered Species Act of 1973, as amended, in a decision published in the March 5, 2010 Federal Register. Please reference the attachment for a list of Idaho counties where Greater sage-grouse can be found.
The public comment period for bull trout *(Salvelinus confluentus)* proposed critical habitat closed April 5, 2010. The Service is currently reviewing comments and a final bull trout critical habitat designation should be published prior to September 29, 2010. Please reference the attachment for a list of Idaho counties where bull trout proposed critical habitat can be found.

The attached list meets the regulatory requirements for obtaining a species list from the Service under section 7(c) of the Endangered Species Act. Please note that, due to time constraints, the attached list contains information regarding species occurrences by county rather than by your agency's administrative boundaries. Please use it to verify the species present in the counties where you are developing projects. Be aware that the attached list does not contain species under the National Marine Fisheries Service's (NOAA Fisheries) jurisdiction. If you have questions regarding species under the NOAA Fisheries' jurisdiction, please call (208) 378-5696.

Candidate species have no protection under the Act, but are included in the attached list for your early planning consideration. Candidate species could be proposed or listed during the project planning period. The Service advises an evaluation of potential effects on candidate species that may occur in the project area; this may expedite section 7 consultation under the Act should the species become listed.

Please note that this will likely be the last semi-annual species list you will receive that the Service generates specifically for your agency. Our efforts are being focused towards the deployment of a web-based system that will allow you to generate your own project-specific species lists. Instructions will be provided to your agency prior to deployment of the new web-based species list system.

Information about Federal agency obligations under section 7 of the Act has been provided to your agency in the past. Additional information on the section 7 process is also available on the Service website at http://www.fws.gov/idaho/agencies.htm (last accessed June 16, 2010). If you would like us to send you any of this information again, or if you have any questions regarding the information we have provided, please contact Bob Kibler at (208) 378-5255. Thank you for your continued interest in the conservation of threatened and endangered species.

Attachment (1)

Listed, Proposed, and Candidate Species Designated and Proposed Critical Habitat in Idaho (Last Updated 6/25/2010)

Grouping	Amphibian	Bird	Bird
Common Name	Columbia spotted frog-Great Basin population	Greater Sage-Grouse	Yellow-billed cuckoo
Scientific Name	*Rana luteiventris*	*Centrocercus urophasianus*	*Coccyzus americanus*
Status	[C]	[C]	[C]
Ada		x	x
Adams		x	
Bannock		x	x
Bear Lake		x	
Benewah			
Bingham		x	x
Blaine		x	x
Boise			x
Bonner			
Bonneville		x	x
Boundary			
Butte		x	
Camas		x	
Canyon			x
Caribou		x	
Cassia		x	x
Clark		x	x
Clearwater			
Custer		x	x
Elmore		x	x
Franklin		x	
Fremont		x	x
Gem		x	
Gooding		x	
Idaho			x
Jefferson		x	x
Jerome		x	
Kootenai			x
Latah			x
Lemhi		x	x
Lewis			x
Lincoln		x	
Madison		x	x
Minidoka		x	x
Nez Perce			
Oneida		x	
Owyhee	x	x	x
Payette		x	
Power		x	
Shoshone			
Teton			
Twin Falls	x	x	x
Valley			
Washington		x	

[C] Candidate Species
[P] Proposed Species
[T] Threatened Species
[E] Endangered Species
[CH] Designated Critical Habitat
[PCH] Proposed Critical Habitat

Listed, Proposed, and Candidate Species Designated and Proposed Critical Habitat in Idaho (Last Updated 6/25/2010)

Grouping	Mammal	Mammal	Mammal	Mammal	Mammal	Mammal
Common Name	Canada lynx		Grizzly bear	Northern Idaho ground squirrel	Selirk Mountain caribou	Southern Idaho ground squirrel
Scientific Name	*Lynx canadensis*		*Ursus arctos horribilis*	*Spermophilus brunneus brunneus*	*Rangifer tarandus caribou*	*Spermophilus brunneus endemicus*
Status	[T]	[CH]	[T]	[T]	[E]	[C]
Ada						
Adams	x			x		x
Bannock						
Bear Lake	x					
Benewah	x					
Bingham						
Blaine	x					
Boise	x					
Bonner	x		x		x	
Bonneville	x		x			
Boundary	x	x	x		x	
Butte	x					
Camas	x					
Canyon						
Caribou	x					
Cassia						
Clark	x		x			
Clearwater	x					
Custer	x					
Elmore	x					
Franklin	x					
Fremont	x		x			
Gem						x
Gooding						
Idaho	x					
Jefferson	x					
Jerome						
Kootenai	x					
Latah	x					
Lemhi	x					
Lewis						
Lincoln						
Madison	x					
Minidoka						
Nez Perce	x					
Oneida						
Owyhee						
Payette						x
Power						
Shoshone	x					
Teton	x		x			
Twin Falls						
Valley	x			x		
Washington				x		x

[C] Candidate Species
[P] Proposed Species
[T] Threatened Species
[E] Endangered Species
[CH] Designated Critical Habitat
[PCH] Proposed Critical Habitat

Listed, Proposed, and Candidate Species Designated and Proposed Critical Habitat in Idaho (Last Updated 6/25/2010)

Grouping	Fish	Fish	Fish	Fish	Fish
Common Name	Bull trout			Kootenai River white sturgeon	
Scientific Name	*Salvelinus confluentus*			*Acipenser transmontanus*	
Status	[T]	[CH]	[PCH]	[E]	[CH]
Ada	x		x		
Adams	x	x			
Bannock					
Bear Lake					
Benewah	x	x	x		
Bingham					
Blaine	x		x		
Boise	x		x		
Bonner	x	x	x		
Bonneville					
Boundary	x	x	x	x	x
Butte	x		x		
Camas	x		x		
Canyon					
Caribou					
Cassia					
Clark					
Clearwater	x		x		
Custer	x		x		
Elmore	x		x		
Franklin					
Fremont					
Gem	x		x		
Gooding					
Idaho	x		x		
Jefferson					
Jerome					
Kootenai	x	x	x		
Latah					
Lemhi	x		x		
Lewis	x		x		
Lincoln					
Madison					
Minidoka					
Nez Perce	x	x	x		
Oneida					
Owyhee	x		x		
Payette	x				
Power					
Shoshone	x	x	x		
Teton					
Twin Falls					
Valley	x		x		
Washington	x	x	x		

[C] Candidate Species
[P] Proposed Species
[T] Threatened Species
[E] Endangered Species
[CH] Designated Critical Habitat
[PCH] Proposed Critical Habitat

Listed, Proposed, and Candidate Species Designated and Proposed Critical Habitat in Idaho (Last Updated 6/25/2010)

Grouping	Mollusk	Mollusk	Mollusk	Mollusk	Mollusk
Common Name	Banbury Springs	Bliss Rapids snail	Bruneau hot springsnail	Snake River physa snail	Utah (Desert) valvata snail
Scientific Name	*Lanx sp.*	*Taiorconcha serpenticola*	*Pyrgolopsis bruneauensis*	*Haitia (Physa) natricinia*	*Valvata utahensis*
Status	[E]	[T]	[E]	[E]	[E]
Ada				x	
Adams					
Bannock					x
Bear Lake					
Benewah					
Bingham					x
Blaine					x
Boise					
Bonner					
Bonneville					x
Boundary					
Butte					
Camas					x
Canyon				x	
Caribou					
Cassia				x	x
Clark					
Clearwater					
Custer					
Elmore		x		x	
Franklin					
Fremont					x
Gem					
Gooding	x	x		x	x
Idaho					
Jefferson					x
Jerome		x		x	x
Kootenai					
Latah					
Lemhi					
Lewis					
Lincoln					x
Madison					x
Minidoka				x	x
Nez Perce					
Oneida					
Owyhee			x	x	
Payette				x	
Power					x
Shoshone					
Teton					
Twin Falls		x		x	x
Valley					
Washington				x	

[C] Candidate Species
[P] Proposed Species
[T] Threatened Species
[E] Endangered Species
[CH] Designated Critical Habitat
[PCH] Proposed Critical Habitat

Listed, Proposed, and Candidate Species Designated and Proposed Critical Habitat in Idaho (Last Updated 6/25/2010)

Grouping	Plant	Plant	Plant	Plant	Plant	Plant	Plant
Common Name	Christ's paintbrush	Goose Creek milkvetch	Macfarlane's four-o'clock	Slickspot peppergrass	Spalding's catchfly	Ute ladies'-tresses	Water Howellia
Scientific Name	*Castilleja christii*	*Astragalus anserinus*	*Mirabilis macfarlanei*	*Lepidium papilliferum*	*Silene spaldingii*	*Spiranthese diluvialis*	*Howellia aquatilis*
Status	[C]	[C]	[T]	[T]	[T]	[T]	[T]
Ada				x			
Adams							
Bannock							
Bear Lake							
Benewah					x		x
Bingham						x	
Blaine							
Boise							
Bonner							
Bonneville						x	
Boundary							
Butte							
Camas							
Canyon				x			
Caribou							
Cassia	x	x					
Clark							
Clearwater							
Custer							
Elmore				x			
Franklin							
Fremont						x	
Gem				x			
Gooding							
Idaho			x		x		
Jefferson						x	
Jerome							
Kootenai					x		x
Latah					x		x
Lemhi							
Lewis					x		
Lincoln							
Madison						x	
Minidoka							
Nez Perce					x		
Oneida							
Owyhee				x			
Payette				x			
Power							
Shoshone					x		x
Teton							
Twin Falls							
Valley							
Washington							

[C] Candidate Species
[P] Proposed Species
[T] Threatened Species
[E] Endangered Species
[CH] Designated Critical Habitat
[PCH] Proposed Critical Habitat

Appendix B –Tribal & SHPO Consultation

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, Idaho 83702-4520

TAKE PRIDE IN AMERICA

MSF-6135
ENV-1.10

NOV 2 / 2010

Honorable McCoy Oatman
Chairman
Nez Perce Tribal Executive Committee
P.O. Box 305
Lapwai, ID 83540

Subject: Invitation for Consultation on the Addition of a Third Hydroelectric Generating Unit at Black Canyon Diversion Dam, Emmett, Idaho – Boise Project

Dear Chairman:

The Bureau of Reclamation wishes to notify the Tribal Council about a plan to construct a third, separate hydroelectric generating unit at Black Canyon Diversion Dam (Figure 1). The dam is located in Gem County on the Payette River near Emmett, Idaho, about 24 miles northwest of Boise (Figure 2). Reclamation invites the Tribal Council to join in consultation with Reclamation and the Idaho State Historic Preservation Officer (SHPO) regarding mitigation of adverse effects resulting from the proposed action. The Advisory Council on Historic Preservation has also been invited to consult; a decision on their involvement is pending.

Historic Significance
With the discovery of gold in the Boise Valley in the early 1860s, the increasing population created a need for agricultural production to feed the growing community. By 1870, farming in the Boise Valley was well established, but most farming was limited to lands along the river and the development of new lands was hindered by lack of reliable irrigation facilities. This problem also plagued the areas outside the Boise Valley including the Payette River to the north. The formulation of the Reclamation Service in 1902 paved the way for large-scale water control features and irrigation systems to be developed. Black Canyon Diversion Dam on the Payette River was authorized for construction on June 26, 1922, and is part of the 121,000-acre Payette Division of the Boise Project. The Payette Division includes lands between the Payette and Boise Rivers and lands north of the Payette River which are serviced by the Emmett Irrigation District. The dam was constructed from 1922-1924, and the initial hydroelectric powerhouse was completed in 1925. The primary function of the facility is to provide Payette River stream flow for agricultural irrigation with hydroelectric power generation designated as a secondary function.

Black Canyon Diversion Dam is a concrete gravity type dam with an ogee overflow spillway. The dam has a structural height of 183 feet. The original storage capacity was 44,700 acre-feet but heavy siltation has reduced the capacity to a volume of 29,600 acre-feet. Water is diverted by gravity into the Black Canyon Main Canal on the south side of the Payette River and by two direct connected turbine-driven hydro-pumps, located within the existing powerhouse, to serve the Emmett Irrigation District Canal on the north side of the river. The two-unit powerplant, housed within the same powerhouse, had an initial total capacity of 8,000 kilowatts. The unit's electrical components were

upgraded in 1995 to provide the additional capability of generating up to 10,000 kilowatts of power, with a potential to generate up to 10,200 kilowatts with further upgrade of the turbines. The powerplant supplies power to the Southern Idaho Federal Power System for Reclamation project uses and for non-project purposes.

Description of Undertaking

The proposed project is the expansion of the Black Canyon Diversion Dam Facility (Figure 3) to allow for additional hydroelectric generation. This operational improvement would increase plant efficiency, flexibility, reduce spillage, provide for additional renewable hydropower, and assist in providing salmon augmentation flows for downstream utilization.

The final design is currently being created by Reclamation's Denver-based Technical Service Center. Plans will include installation of a third 10 MW generating unit in a new powerhouse building, a new 11-foot diameter penstock, and a steel debris chute. The demolition and relocation of a combination office/shop building and the removal of the existing switchyard and installation of a new switchyard will also take place. Installation of the penstock would include punching a hole through the dam adjacent to the location of the existing penstocks (Figure 4), and excavating rock in order to set the penstock along its line to the powerhouse.

The normal pool level of Black Canyon Reservoir at the forebays is 2,483 feet. The reservoir would have to be lowered below an elevation of 2,468 feet to enable the construction of the penstock penetration. (It is important to note that this lowered elevation is considered to be within the normal operation of the reservoir, and lowering the reservoir to this level occurs every few years for regular maintenance activities.) The penstock will be founded on the front face of the dam and on rock parallel to the existing penstocks, although partly buried in the ground. Careful removal of existing rock mass will be required in proximity to the base of the dam and in proximity to the existing penstocks, which will be accomplished through the use of chemical, non-explosive expansive agents and mechanical excavators.

The existing powerhouse will be unaffected except by the construction of the new powerhouse within its viewshed. Reclamation will take steps to lessen the visual impact of the new powerhouse building. First, it will be offset from the front of the existing powerhouse so as not to obstruct the public's view. Second, the new powerhouse will be designed to capture the look and feel of its fellow. According to the Reclamation publication "Analysis/Review/Update of 2003 Feasibility Study for Construction of a 3rd Hydroelectric Generating Unit at Black Canyon Diversion Dam, Emmett, Idaho," the new powerhouse would architecturally reflect and promote the existing historic character of the site (Figure 5). On page 25 of that report, it is stated that:

> "In order to preserve the historic qualities of the site, the powerhouse superstructure will be architecturally similar to the existing powerhouse with precast concrete walls and a metal sloped roof structure with insulation and membrane water proofing. The powerhouse substructure will be constructed of cast-in-place concrete."

The overall footprint of the new powerplant is slightly larger than its existing counterpart to accommodate the new generating unit and additional office space, but the height of the building is still under consideration. The current design includes an interior crane system similar to the one existing in the original powerhouse (Figure 6). However, there may be a change in the design to

lower the height of the roof by almost half by eliminating the interior crane and, instead, positioning a large mobile crane outside the building. This exterior crane would not be a permanent structure and would be deployed as needed. That decision will be made in the near future.

In addition, the existing (original) switchyard (Figure 7) would be removed and a new, larger switchyard would be created to the north of the existing powerhouse on top of a basalt bench.

A third component is the demolition and relocation of the combination office/shop building. This structure was added to the facility in the mid- to late 1960s to provide offices, training facilities, and a maintenance work area in support of the dam. The current proposal is to construct a new office building outside of the fenced facility to the south, but still on Reclamation property. (This plan is not yet final and, therefore, does not appear within the area of potential effect as outlined below.)

Construction on this project is slated to begin near the end of 2012 and continue for a 2-year construction window.

Identification of the Area of Potential Effect (APE) and Historic Properties Within
For Section 106 purposes, the APE for the present project is considered to be the dam, the powerhouse yard, and the switchyard. Figures 8 and 9 present the changes that are proposed within the APE.

The historic properties located within the APE include a portion of the dam, the existing powerhouse, the existing switchyard, and a portion of the original railway used to transport equipment into the existing powerhouse. The dam and powerplant were determined eligible for listing on the National Register of Historic Places by the Idaho State Historic Preservation Officer on August 22, 1998. This eligibility was granted due to the pivotal role the dam and powerplant played in the development of the Payette River Valley, the exceptional condition and physical appearance of the original equipment, and the historic and technological contribution of the structure.

On April 21, 2010, Reclamation engineering and cultural resources staff first consulted with Idaho SHPO personnel regarding this proposed project. During that meeting, it was agreed that this proposed action would be deemed an adverse effect. This decision was based upon the fact that completion of the action will result in the alteration of part of an original significant historic structure (drilling a hole in the dam), and negative visual impacts to a second significant historic structure (the existing powerplant).

Reclamation is also concerned with the potential existence of Indian Trust Assets within the APE. At this time, Reclamation would like to enter into formal consultation with the Nez Perce Tribe.

Recommended Actions to Mitigate Adverse Effects
During the initial on-site meeting with SHPO staff, Reclamation personnel discussed basic details of the project. The goal of the meeting was to attempt to preliminarily identify and possibly pre-empt any adverse effects.

The proposed size and placement of the new powerhouse in relation to the existing powerhouse caused concern to the SHPO. As presented at that time, the new building would be larger and its location directly in front would almost completely obscure the view of the existing historic

powerhouse. Discussion ensued about moving the footprint of the new building to the north far enough to keep the original powerhouse in view of the public park and parking lot just downstream. That view is a critical element in the experience of the area. Project management agreed to revisit the building plans to see if this could be accomplished and, as a result of this consideration, the current proposal now offsets the footprint of the new powerplant far enough to the north that the existing powerplant will still be visible to the public from the nearby park. As mentioned above, there is also discussion to lower the height of the roof by half of the original proposal by removing the interior crane system, but a final decision on this proposed change is yet to be made.

The fact that no Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) documentation yet exists for Black Canyon Diversion Dam was also a concern to the SHPO, and it was agreed by both parties that this should be undertaken prior to project actions. Reclamation project management has since secured funding for HABS/HAER documentation of the powerhouse and dam in their current state, and this will be accomplished as part of the mitigation effort.

As final design of the project specifics is still underway, further consultation is planned with Tribes and SHPO to identify new or unexpected effects. Reclamation will be working in consultation with the SHPO to develop a Memorandum of Agreement pursuant to 36 CFR Part 800, which would formalize the mitigation measures mentioned in the preceding paragraph. Please advise this office as to whether the Tribal Council wishes to join in this consultation by contacting me directly at 208-383-2246; or you may contact Ms. Jenny Huang, Archeologist, at 208-383-2257 or via email at JHuang@usbr.gov if you have any questions regarding this letter.

Sincerely,

JERROLD D. GREGG

Jerrold D. Gregg
Area Manager

Enclosure

bc: SRA-1000 (Gregg), SRA-1008 (Adams), MSF-1100 (Beardsley), MSF-6100 (Reavis), MSF-6121 (Fitzgerald), MSF-3100 (Hoffman), PN-3824 (Tiedeman) (w/encl to each)

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Identical Letter Sent To:

Honorable Nathan Small
Chairman
Shoshone-Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203-0306

Continued on next page.

Continued from previous page.

Honorable Robert C. Bear
Chairman
Shoshone-Paiute Tribal Council
P.O. Box 219
Owyhee, NV 89832-0219

Honorable Elwood Patawa
Chairman
Confederated Tribes of the
Umatilla Indian Reservation
Nixya'awii Governance Center
46411 Timi`ne Way
Pendleton, OR 97801

Honorable Diane Teeman
Chair
Burns Paiute Tribe
100 Pasigo Street
Burns, OR 97720

Preserving America's Heritage

November 30, 2010

Mr. Jerrold D. Gregg
Area Manager
Bureau of Reclamation
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

Ref: Proposed Addition of Third Hydroelectric Generating Unit at Black Canyon Diversion Dam Emmett, Gem County, Idaho

Dear Mr. Gregg:

On November 15, 2010, the Advisory Council on Historic Preservation (ACHP) received your notification and supporting documentation regarding the adverse effects of the referenced project on properties listed on and eligible for listing in the National Register of Historic Places. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800), does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed. However, if we receive a request for participation from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer, affected Indian tribe, a consulting party, or other party, we may reconsider this decision. Additionally, should circumstances change, and you determine that our participation is needed to conclude the consultation process, please notify us.

Pursuant to 36 CFR §800.6(b)(1)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the Idaho SHPO, and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the MOA and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the National Historic Preservation Act.

Thank you for providing us with the opportunity to review this undertaking. If you have any questions, please contact Tom McCulloch at 202-606-8554, or via email at tmcculloch@achp.gov.

Sincerely,

Raymond V. Wallace

Raymond V. Wallace
Historic Preservation Technician
Office of Federal Agency Programs

ADVISORY COUNCIL ON HISTORIC PRESERVATION
1100 Pennsylvania Avenue NW, Suite 803 Washington, DC 20004
Phone: 202-606-8503 Fax: 202-606-8647 achp@achp.gov www.achp.gov

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, Idaho 83702-4520

TAKE PRIDE IN AMERICA

MSF-6135
ENV-1.10

Mr. Tom McCulloch
Program Analyst, Office of Federal Agency Programs
Advisory Council on Historic Preservation
Old Post Office Building
1100 Pennsylvania Avenue, NW, Suite 803
Washington, DC 20004-2501

Subject: Invitation for Consultation on the Addition of a Third Hydroelectric Generating Unit at Black Canyon Diversion Dam, Emmett, Idaho, Payette Division, Boise Project

Dear Mr. McCulloch:

The Bureau of Reclamation wishes to notify the Advisory Council on Historic Preservation (Council) about a plan to construct a third, separate hydroelectric generating unit at Black Canyon Diversion Dam (Figure 1). The dam is located in Gem County on the Payette River near Emmett, Idaho about 24 miles northwest of Boise (Figure 2). Reclamation invites the Council to join in consultation with Reclamation, relevant Indian Tribes and the Idaho State Historic Preservation Officer (SHPO) regarding mitigation of adverse effects resulting from the proposed action.

Historic Significance
With the discovery of gold in the Boise Valley in the early 1860s, the increasing population created a need for agricultural production to feed the growing community. By 1870, farming in the Boise Valley was well established, but most farming was limited to lands along the river and the development of new lands was hindered by lack of reliable irrigation facilities. This problem also plagued the areas outside the Boise Valley, including the Payette River to the north. The formulation of the Reclamation Service in 1902 paved the way for large-scale water control features and irrigation systems to be developed. Black Canyon Diversion Dam on the Payette River was authorized for construction on June 26, 1922, and is part of the 121,000-acre Payette Division of the Boise Project. The Payette Division includes lands between the Payette and Boise Rivers and lands north of the Payette River which are serviced by the Emmett Irrigation District. The dam was constructed from 1922-1924, and the initial hydroelectric powerhouse was completed in 1925. The primary function of the facility is to provide Payette river stream flow for agricultural irrigation, with hydroelectric power generation designated as a secondary function.

Black Canyon Diversion Dam is a concrete gravity type dam with an ogee overflow spillway. The dam has a structural height of 183 feet. The original storage capacity was 44,700 acre-feet but heavy siltation has reduced the capacity to a volume of 29,600 acre-feet. Water is diverted by gravity into the Black Canyon Main Canal on the south side of the Payette River and by two

direct connected turbine-driven hydro-pumps, located within the existing powerhouse, to serve the Emmett Irrigation District Canal on the north side of the river. The two-unit powerplant, housed within the same powerhouse, had an initial total capacity of 8,000 kilowatts. The unit's electrical components were upgraded in 1995 to provide the additional capability of generating up to 10,000 kilowatts of power, with a potential to generate up to 10,200 kilowatts with further upgrade of the turbines. The powerplant supplies power to the Southern Idaho Federal Power System for Reclamation project uses and for non-project purposes.

Description of Undertaking

The proposed project is the expansion of the Black Canyon Diversion Dam facility (Figure 3) to allow for additional hydroelectric generation. This operational improvement would increase plant efficiency, flexibility, reduce spillage, provide for additional renewable hydropower, and assist in providing salmon augmentation flows for downstream utilization.

The final design is currently being created by Reclamation's Denver-based Technical Service Center (TSC). Plans will include installation of a third 10 MW generating unit in a new powerhouse building, a new 11 ft. diameter penstock, and a steel debris chute. The demolition and relocation of a combination office/shop building, and the removal of the existing switchyard, and installation of a new switchyard will also take place. Installation of the penstock would include punching a hole through the dam adjacent to the location of the existing penstocks (Figure 4), and excavating rock in order to set the penstock along its line to the powerhouse.

The normal pool level of Black Canyon Reservoir at the forebays is 2,483 ft. The reservoir would have to be lowered below an elevation of 2,468 ft. to enable the construction of the penstock penetration. (It is important to note that this lowered elevation is considered to be within the normal operation of the reservoir, and lowering the reservoir to this level occurs every few years for regular maintenance activities.) The penstock will be founded on the front face of the dam and on rock parallel to the existing penstocks, although partly buried in the ground. Careful removal of existing rock mass will be required in proximity to the base of the dam and in proximity to the existing penstocks, which will be accomplished through the use of chemical, non-explosive expansive agents and mechanical excavators.

The existing powerhouse will be unaffected, except by the construction of the new powerhouse within its viewshed. Reclamation will take steps to lessen the visual impact of the new powerhouse building. First, it will be offset from the front of the existing powerhouse so as not to obstruct the public's view. Second, the new powerhouse will be designed to capture the look and feel of its fellow. According to the Reclamation publication "Analysis/Review/Update of 2003 Feasibility Study for Construction of a 3rd Hydroelectric Generating Unit at Black Canyon Diversion Dam, Emmett, Idaho," the new powerhouse would architecturally reflect and promote the existing historic character of the site (Figure 5). On page 25 of that report, it is stated that:

> "In order to preserve the historic qualities of the site, the powerhouse superstructure will be architecturally similar to the existing powerhouse with precast concrete walls and a metal sloped roof structure with insulation and membrane water proofing. The powerhouse substructure will be constructed of cast-in-place concrete."

The overall footprint of the new powerplant is slightly larger than its existing counterpart to accommodate the new generating unit and additional office space, but the height of the building is still under consideration. The current design includes an interior crane system similar to the one existing in the original powerhouse (Figure 6). However, there may be a change in the design to lower the height of the roof by almost half by eliminating the interior crane and instead positioning a large mobile crane outside the building. This exterior crane would not be a permanent structure and would instead be deployed as needed. That decision will be made in the near future.

In addition, the existing (original) switchyard (Figure 7) would be removed and a new, larger switchyard would be created to the north of the existing powerhouse on top of a basalt bench.

A third component is the demolition and relocation of the combination office/shop building. This structure was added to the facility in the mid- to late 1960's to provide offices, training facilities, and a maintenance work area in support of the dam. The current proposal is to construct a new office building outside of the fenced facility to the south, but still on Reclamation property. (This plan is not yet final, and therefore does not appear within the area of potential effect as outlined below.)

Construction on this project is slated to begin near the end of 2012 and continue for a two-year construction window.

Identification of the Area of Potential Effect (APE) and Historic Properties Within
For Section 106 purposes, the APE for the present project is considered to be the dam, the powerhouse yard, and the switchyard. Figures 8 and 9 present the changes that are proposed within the APE.

The historic properties located within the APE include a portion of the dam, the existing powerhouse, the existing switchyard, and a portion of the original railway used to transport equipment into the existing powerhouse. The dam and powerplant were determined eligible for listing on the National Register of Historic Places by the Idaho State Historic Preservation Officer on August 22, 1998. This eligibility was granted due to the pivotal role the dam and powerplant played in the development of the Payette River Valley, the exceptional condition and physical appearance of the original equipment, and the historic and technological contribution of the structure.

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Recommended Actions to Mitigate Adverse Effects
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As final design of the project specifics is still underway, further consultation is planned with SHPO to identify new or unexpected effects. Reclamation will be working in consultation with the SHPO to develop a Memorandum of Agreement pursuant to 36 CFR Part 800, which would formalize the mitigation measures mentioned in the preceding paragraph. Please advise this office as to whether the Council wishes to join in this consultation by contacting me directly at 208-383-2248 or via email at jgregg@usbr.gov; or you may contact my staff archeologist Ms. Jenny Huang at 208-383-2257 or via email at jhuang@usbr.gov, if you have any questions regarding this letter.

Sincerely,

ACTING FOR

C.J. BEARDSLEY

Jerrold D. Gregg
Area Manager

Enclosure

bc: PN-3824 (Tiedeman)
SRA-1000, SRA-1008 (Adams), MSF-1100 (Beardsley), MSF-6100 (Reavis), MSF-6121 (Fitzgerald), MSF-3100 (Hoffman) (w/encl to each)

WBR:JHuang:chunter:11/05/10:208-383-2257:MSF-6135
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June 7, 2011

Christopher J. Beardsley, Deputy Area Manager
U.S. Bureau of Reclamation
Snake River Area Office
230 Collins Rd.
Boise ID 83702-4520

RE: Invitation to Consult Regarding Proposed Third Generating Unit and New Powerhouse at Black Canyon Diversion Dam, Emmett, Idaho – Boise Project, Payette Division.

Dear Mr. Beardsley,

Thank you for the formal invitation to consult regarding the above project, the adverse effect, and the proposed mitigation. The early consultation initiated on this project resulted in a design which vastly minimized the adverse effects of the new construction on a significant historic property.

We would also like to take this opportunity to commend you and your staff (Jenny Huang) for maintaining an extraordinarily effective line of communication with our office regarding this project. We look forward to continuing our discussions with your agency on this project and to develop the Memorandum of Agreement.

If you have any questions, please contact us.

Sincerely,

Susan Pengilly
Deputy State Historic Preservation Officer